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SEPTEMBER, 1907.

$2.00 per year.
$3.00 with Directory.

TEXTILE WORLD RECORD

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LORD & NAGLE CO. BOSTON

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The Textile-Finishing Machinery Co.

HOWARD BUILDING

STAIRWAYS, 83 EXCHANGE PLACE [ENTRANCES] ELEVATOR, 171 WESTMINSTER ST.

PROVIDENCE, R. I.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application.

Southern Agent, STUART W. CRAMER, Charlotte, N. C., Equitable Building, Atlanta, Ga.

Calender and Mangle Rolls

COTTON

PAPER (LINEN, COTTON OR MANILLA)

FELT PAPER

COMBINATION (COTTON AND HUSK)

COMBINATION (COTTON AND EXCELSIOR)
PATENTED

HUSK

FIBRE

BRASS CHILLED IRON RUBBER

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

BLEACHING, DYEING, DRYING AND FINISHING MACHINERY FOR SILK, COTTON AND WORSTED FABRICS.

The Camless Winder

16,048

Spindles sold in three years.

An UNPRECEDENTED RECORD, which to any fair mind must denote IMPROVEMENT, and PROMOTE INTEREST.

The

Camless Increased Taper Cone

is unquestionably a factor in the machine's success

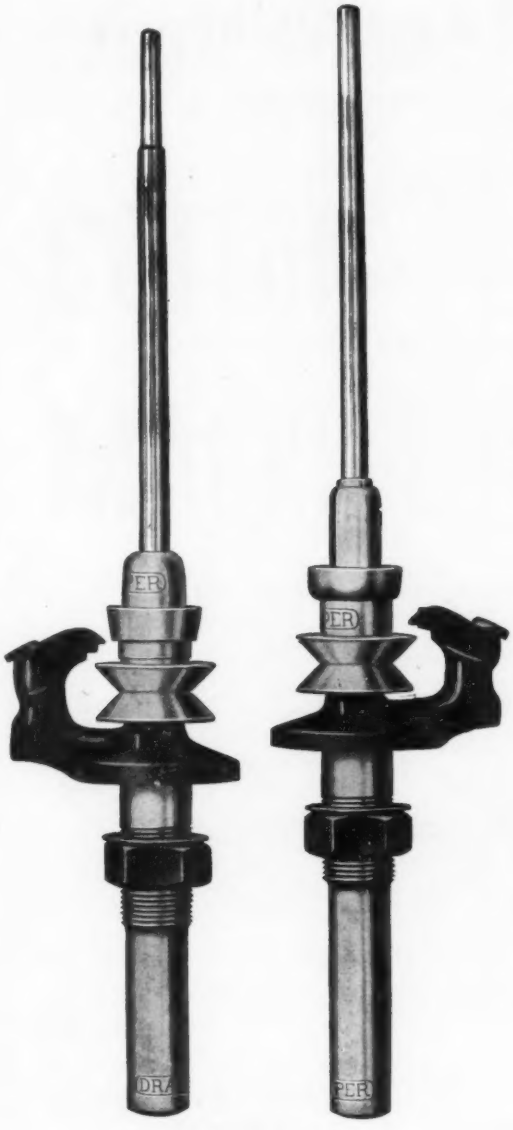
As **LEADERS** not **FOLLOWERS** of this system, we INCREASE the angle of the cone without changing SHAPE OR SIZE of pasteboard core.

RESULT

MORE yarn and **LESS** hole

Think this over.

Lowell Machine Shop, Lowell, Mass.



Two New
Large Size
Spinning Spindles.

We make

Draper,
Whitin,
McMullan

and other
types of

Spindles;

also

Northrop Looms,

Twisters,
Warpers,
Spoolers,
Reels,

Banding Machines,

etc., etc.

Draper Company,
HOPEDALE,
MASS.

THE EMPHATIC SUCCESS OF OUR "IDEAL" AUTOMATIC LOOM IS DUE TO SEVERAL SALIENT POINTS OF SUPERIORITY OVER ALL COMPETITORS:

1st. The ease and smoothness with which they start up.

2d. The acknowledged superiority of the cloth woven.

3d. Simple and thoroughly mechanical construction, assuring freedom from the constant breakage and expensive repairs attending other automatic looms.

4th. No special bobbins, shuttles or other expensive parts.

5th. Ability to use cop or bobbin filling interchangeably.

6th. Superiority of warp stop motion which does not break or fray the softest yarn.

7th. Of the thousands in operation not a single bobbin or crank shaft broken.

IN PROOF OF CLAIMS WE POINT TO THOSE MILLS FORMERLY USING OUR COMPETITORS' LOOMS THAT ARE NOW USING OURS.

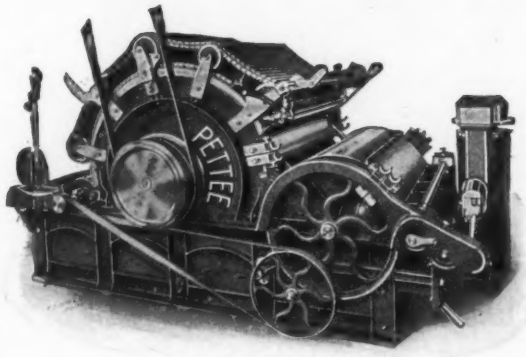
The Stafford Company

Readville, Mass.

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

Shops—

Biddeford, Me.

Newton Upper Falls, Mass.

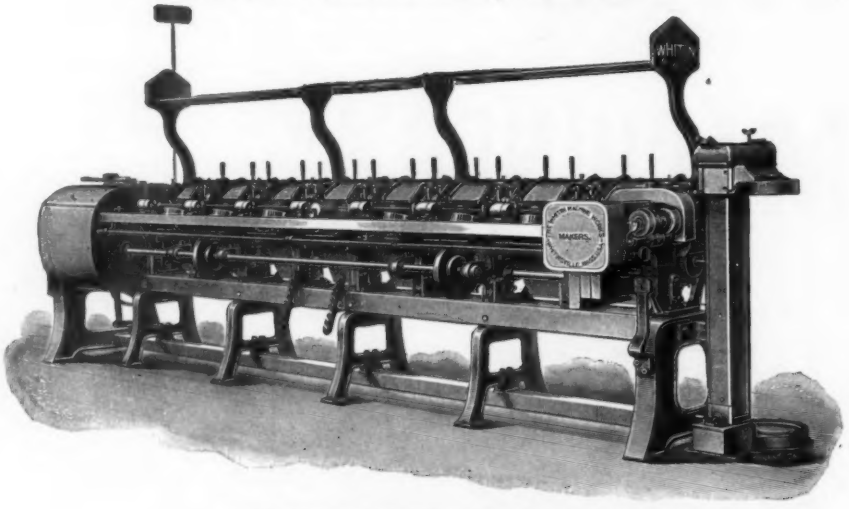
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

Southern Agent,
S. W. CRAMER

Trust Building, CHARLOTTE, N. C.
Equitable Building, ATLANTA, GA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

SCOTT & WILLIAMS

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

BUILDERS OF

Full Particulars, Samples nnd Special Catalogues on Application.

Rib Knitting Machinery for Underwear and Hosiery

Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

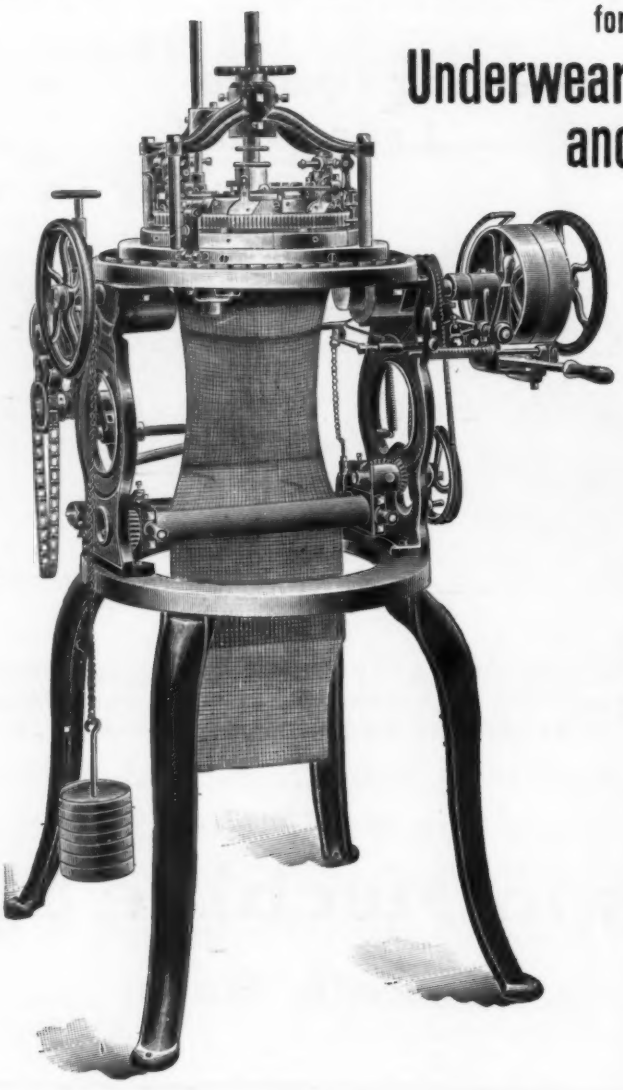
Improved Measuring Device, by actual length knit.

Sizes 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, 4 to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters, etc.



The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

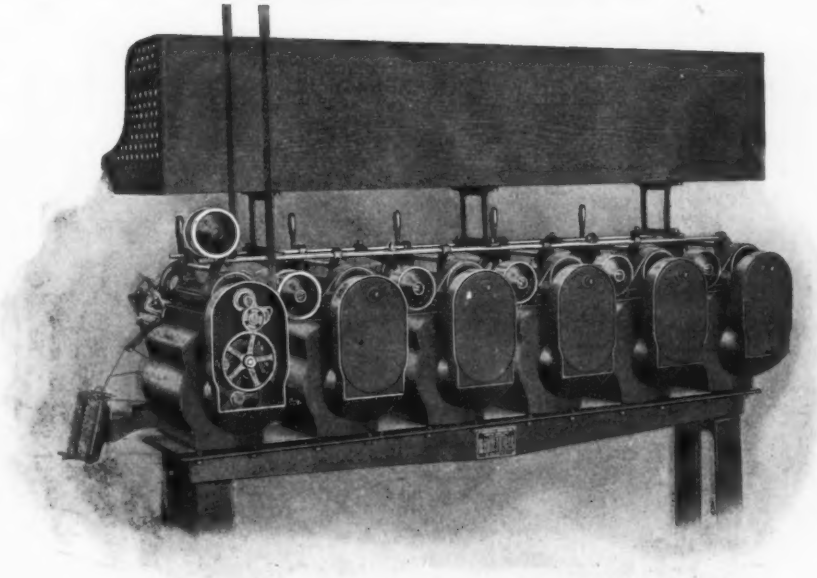
for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Automatic and 7-8 Automatic Seamless Hosiery Machinery.

Knitters ask for the Nutaper Cone



Our recent "fixed-gain" device has added greatly to the efficiency of the No. 50 machine, simplifying its operation and insuring the production of cones having unvarying and correct spacing for delivery to knitting machines.

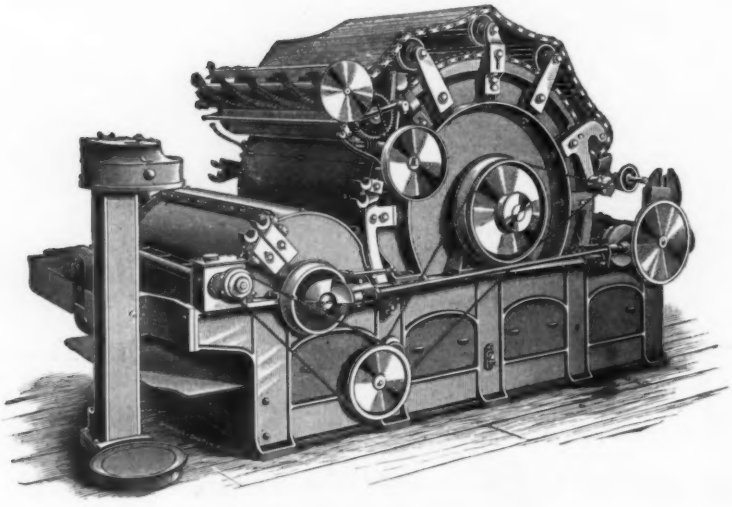
Universal Winding Company
BOSTON

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

INCLUDING

Plain and Fancy Silk Looms

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

JOSEPH SYKES BROS.,
Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S,
Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'.

Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

Jacob K. Altemus is

Able to supply the best

Cop Winding Machinery

Or Hosiery Winders and more in particular

Bobbin Winders,

Keep in mind that I

Always produce machines that are right

Letting nothing go out

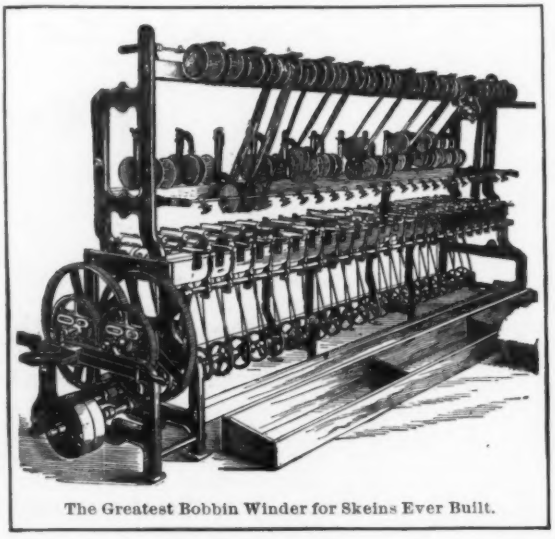
That is not satisfactory before delivery.

Every

Manufacturer should investigate warping and beaming machinery, warp splitting as well,

Upright Spoolers, Quillers, Warpers, Twisters, etc.

Send for full information and prices.



The Greatest Bobbin Winder for Skeins Ever Built.

Textile Machinery

2824 N. 4th St., Philadelphia, Pa,

Shuttles for all Textile purposes and Sundry Special Loom devices

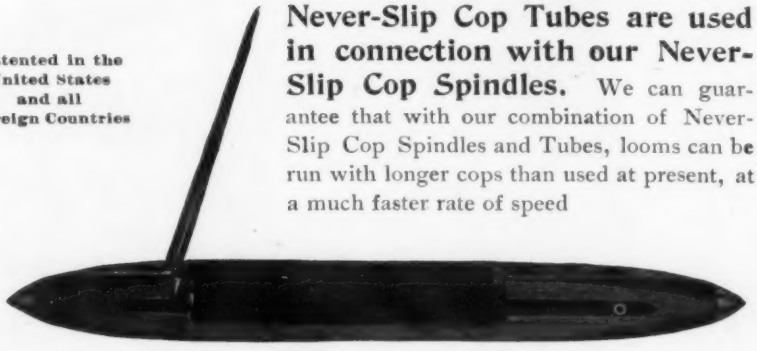
Never=Slip Cop Spindles and Tubes

Never-Slip Cop Tube

Patent applied for

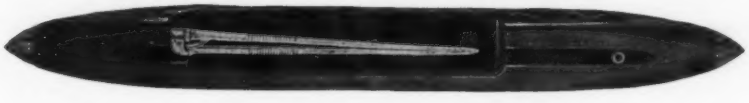
Patented in the United States and all Foreign Countries

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered.

U. S. Patents: 778851, Jan. 3, 1905; 79611, May 23, 1905; other patents pending

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American Textile Specialty Machinery Co.

363-373 Rider Avenue, New York City

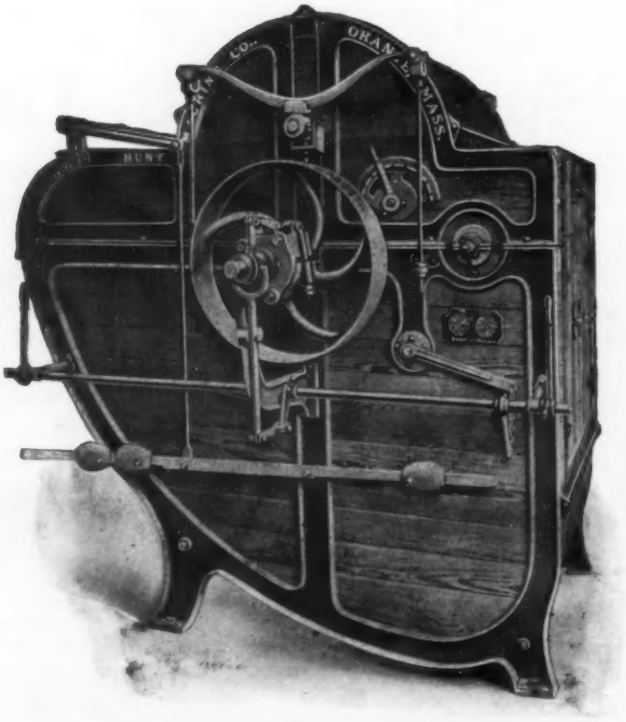
NEAR MOTT AVENUE SUBWAY STATION

Electric and Automatic

Warp Stop Motion for Silk, Wool and Cotton

Simplicity! *Perfection!*

Rodney Hunt
MACHINE CO.
ORANGE MASS.



RODNEY HUNT-TYPE SH-FULLING MILL

Less cost to operate—by—more efficient design
Less first cost—by—more modern production
Less repairs—by—superior construction
Special Circular No. 301 tells why it has MORE CAPACITY and gives BETTER RESULTS
SOLD ON TRIAL
It will pay to investigate our

TEXTILE WET FINISHING MACHINERY

RODNEY HUNT MACHINE CO.

Branch Office: 70 Kilby St., Boston. - Main Office and Works: Orange, Mass.

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

Cloth Washers. *Bulletin 51*

The Hunter CLOTH WASHER

Various Types and Sizes Fully Described in Bulletin 51. Ask for it.

HARWOOD'S MACHINERY

Improves Quality, Increases Production, Decreases Labor Cost.

THE BRAMWELL SELF-WEIGHING FEEDER.

For Woolen, Worsted, Hosiery and Shoddy Cards and Garnett Machines.

We have made a careful study of all phases of the feeding problem and by adaptations and modifications of the Bramwell Feeder to meet the particular conditions, are prepared to feed evenly all kinds of stock from rabbit's fur to jute tow, including shoddy, cotton, fine wool, mixtures, fine and coarse worsted, flax tow, long worsted and all other kinds of stock. High efficiency under all sorts of conditions has led to the practically universal use of the Bramwell Feeder.

THE APPERLY FEEDER.

For Second Breaker and Finisher Cards.

Today there are about 15,000 machines of our construction running in this country and Canada. It is an efficient, positive and up-to-date feed, and we can offer manufacturers the choice between the Kemp positive geared traveler and the Standard traveler with all other recent improvements.

THE BRAMWELL PICKER FEED.

For Burr Pickers, Mixing Pickers, Fearnaughts and Lumpers.

Wide awake manufacturers are more and more realizing the wisdom of bringing their stock to the card room in a better state of preparation. Hand feeding is becoming a thing of the past in the picker room as in the card room. The latest Bramwell Picker Feed is built to handle all kinds of stock in any quantity with evenness and without injury to the staple.

THE SPENCER AUTOMATIC STOCK OILING MACHINE.

A modern device for oiling the stock automatically on its way to the picker from the Bramwell Picker Feed, superseding the wasteful, dirty method heretofore in use. Because of the accuracy of this method and the fact that the oil goes on the stock (instead of the floor and walls) there is a large saving of oil, and the stock is more evenly oiled and much better prepared for the carding process.

THE MODERN BRAMWELL FEED FOR WOOL WASHERS AND WOOL DRYERS.

The scouring and drying of stock is today recognized as a very important part of the manufacture of textiles, especially in worsted mills. Our feeds are recognized as the standard for properly feeding stock in the grease or wet stock with absolutely no injury to the staple, with evenness and in sufficient quantity and in the best possible condition for economical scouring.

REPAIRS AND IMPROVEMENTS FOR OLD FEEDERS.

The feeders we are building today are modern and up-to-date, but these improvements and attachments can be placed on older feeders of our construction, greatly to their benefit. We claim that **no outlay will show a greater return** to a manufacturer than money spent in bringing your Bramwell and Apperly Feeds thoroughly up-to-date.

APRONS OF ALL KINDS.

We build about thirty different styles of spike aprons adapted to the various kinds of stock our feeders are called upon to handle. We put into our aprons the **best** materials and workmanship money can buy. We could make cheaper aprons by using cheaper materials and less expensive labor. The apron would LOOK nearly as well but would WEAR only two or three years instead of from five to ten or twelve.

Call on us for particulars and information about all matters relating to Feeding Machinery.

GEO. S. HARWOOD & SON,

53 State St., Boston, Mass.

Tel. 3212 Main.

WORKS: HARWOOD & QUINCY MACHINE CO., Worcester, Mass.

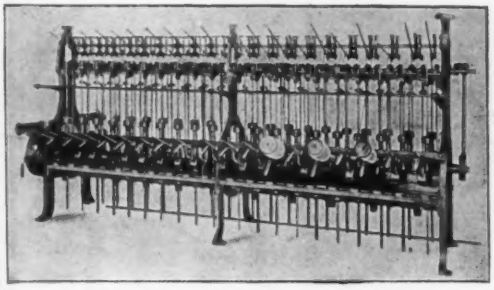
MAKE ALL SHIPMENTS TO OUR WORKS.

OSWALD LEVER CO.

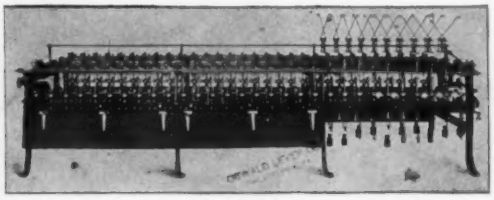
(Formerly LEVER & GRUNDY.)

MANUFACTURERS OF TEXTILE MACHINERY AND SOLE MAKERS OF OUR PATENTED SPECIALTIES IN THE UNITED STATES.

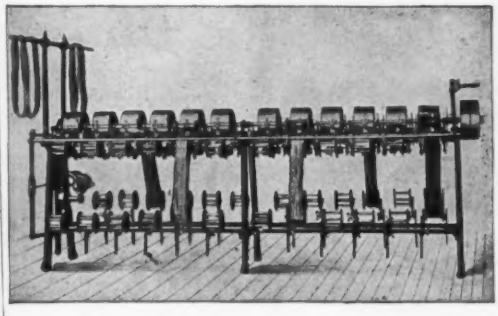
Conical and Parallel Tube Winding Machines; Warping Machines and Creels; Brass Bobbin Winding and other Machinery for lace mills; Chenille Cutting Machines, Sectional Warping Mills, Beaming Machines, etc.



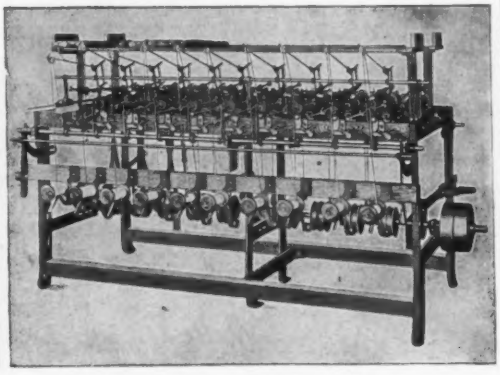
Vertical Spindle Gear Driven Winder, as used by all manufacturers of heavy duck, jute, cotton bagging and carpets.



Silk Winder to wind on Quills, Paper Tubes or Butts. The finest of cotton or silk.



Pressure Drum Spooling Machine. This machine is adapted for spooling any kind of yarn, whether from mule cops or skeins.

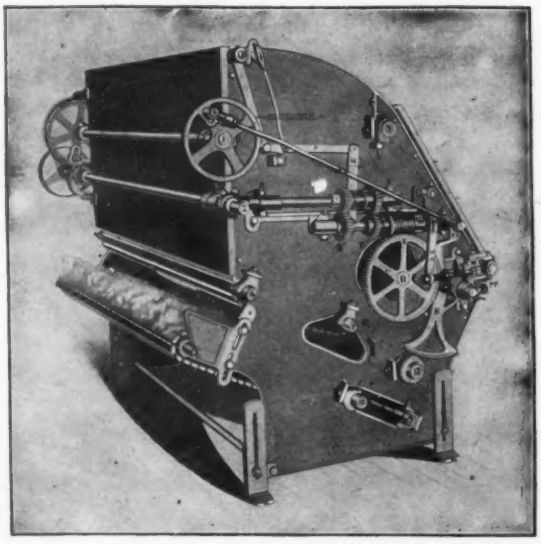


This Machine may be arranged to wind from skeins, spools, cones, or any kind of spinning bobbins. Most suitable machine for cotton or woolen blankets.

Cop Winding Machines for butts to weave from outside; Filling Bobbin or Quill Winding Machines; Vertical Spindle Spooling Machines for Silk, fine cotton, wool and worsted; Variable Speed Bobbin Machines for large bobbins used in knitting mills; Dresser Spooling Machines; Reeling Machines.

Lehigh Ave. and Mascher Sts., PHILADELPHIA, PA., U. S. A.

THE FISHER PATENT CARD FEED



Write Us For List of Mills Where Machines Are Used.

Woonsocket Machine and Press Company

WOONSOCKET, R. I.

It's the Comb

The Comb Opens Out the Cotton

This enables us to place the specially shaped bars closer together. This means saving cotton, yet getting better cleaning. When you save cotton you save the cost of labor, power etc., expended upon it.

The Picker Room is the place to get the dirt out—not the Carding room—this is what the Schaellibaum Patent Grid does.

That's Why

The Schaellibaum Patent Grid

The Grid with a Comb.

Does better work than any other and helps your profits. There are other reasons which are set forth in our booklet, "More Yarn and Better." Write for it.

Write us in either English, French, German, Spanish or Italian.

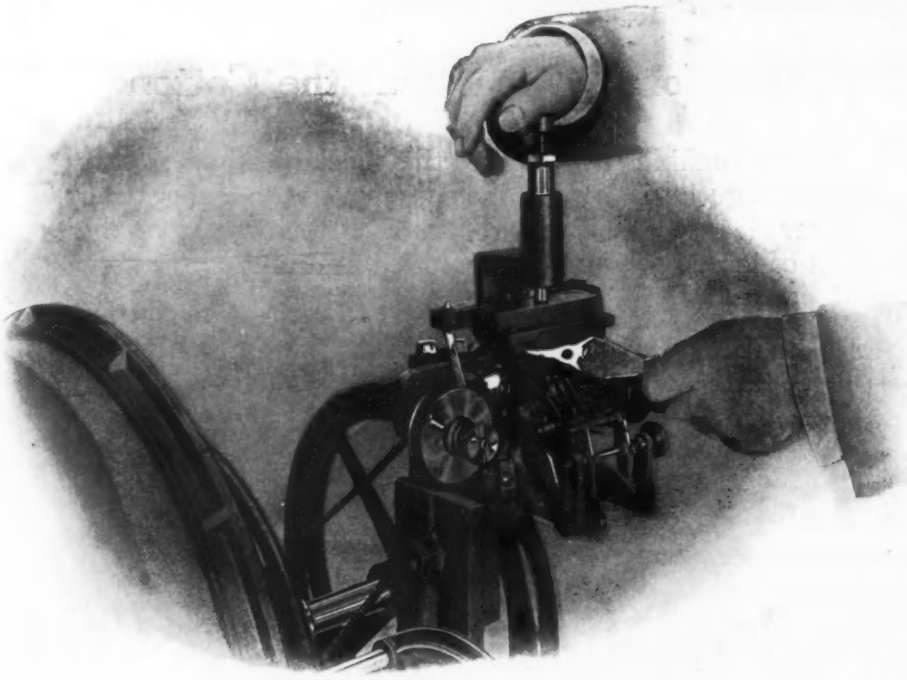
The Rob. Schaellibaum Co., 288 Dyer Street

Providence, R. I.

Manchester, England Mulhausen, Germany Bombay, India

TICKET PRINTER

PATENTED



PRINTS on any size or style ticket the exact measurement of each piece in yards, halves, quarters and eights up to 99⅞ yards. Prints with metal type ⅛-inch wide by $\frac{3}{16}$-inch high, using regular typewriter ribbon. A small, durable, accurate device, easily and quickly attachable to any PARKS & WOOLSON MEASURING MACHINE. Driven with bicycle sprocket and chain from the shaft of the measuring drum.

Saves time—much.

Saves mistakes—many.

You may try it thirty days.

Our representative will call if you are interested.

We will attach this device to any make of measuring machine

PARKS & WOOLSON MACHINE COMPANY

Springfield Vermont

B & C
TRADE MARK

Production

IS

The Test of Efficiency.

The Barber Warp Tying Machine

is not only making good every claim we have advanced for it, but in many mills is far exceeding them.

The record of production given below shows what a Barber Warp Tying Machine can do inside the first two months of its installation, at a time when its operator is comparatively inexperienced.

Week of	**56½**	**hours,**	**707,224**	**ends**
"	**58¼**	"	**720,260**	"
"	**49½**	"	**612,268**	"

If the Barber Warp Tying Machine is producing these splendid results in your competitors mill, it will do the same in your mill. We ask you to note the excess over a production of 10,000 ends, hour by hour.

It is well worth an investigation. Do not delay doing so. We will be glad to have our salesman call upon you.

Barber-Colman Company

77-79 No. Washington St. (Cor. Thacher), Boston, Mass.

Insurance Against
Loss of Profits

Is there a fly-wheel in your mill?

Suppose it should burst and demolish the building and delicate machinery?

Machinery cannot be replaced quickly. In fact, it usually takes months to replace. Where it is of a special type, or designed for a special purpose, the delay is of course much greater.

Meanwhile what is happening to your business?

Your plant is idle; no goods can be made. Just think what an enormous loss you will suffer if the output of your mill is even as low as $150 per day.

Why not protect yourself by insurance?

Maryland Casualty Company is now covering this loss by special endorsement attached to its Fly-Wheel Insurance policy. The indemnity payable under this indorsement is not deducted from the face value of the policy, but is a separate insurance which the Company pays in addition to the face value of the policy. This is really the greater loss from fly-wheel explosion. Protect yourself in time.

Write us for full particulars, giving amount of insurance desired, number and diameter of the fly-wheels and pulleys you want covered. We will quote rates by return mail. Ask for form 237–G descriptive of this insurance.

Maryland Casualty Company
Baltimore, Maryland

The Maryland continues to sell, at fair rates the Standard form of liability policy, which is as good as the best sold by any other company.

The Company also writes Burglary, Sprinkler Leakage, Teams, Elevator, Personal Accident, Steam Boiler, Water Damage, Physicians' Defense, Plate Glass, Disability, Automobile, Health, Fly-Wheel, and all other classes of casualty insurance.

Assets over
$3,691,447.50

MARYLAND CASUALTY COMPANY
MERITS COMPLETE CONFIDENCE

Surplus to Policyholders
$1,722,046.77

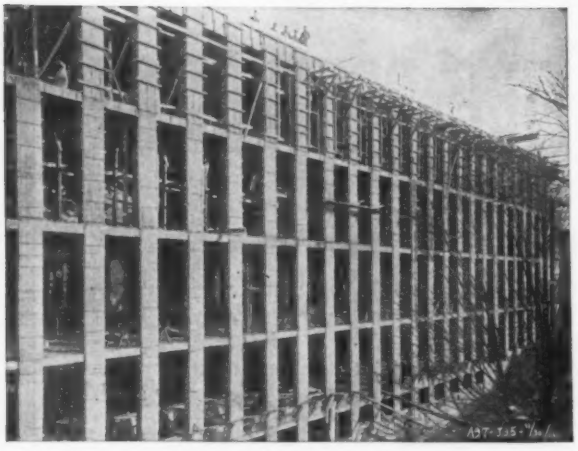
PRACTICAL FIRE PROTECTION

If you want your mill buildings properly protected against the fire hazard, thereby obtaining the lowest insurance rates, you must have a supply of water which is instantly available under high pressure and absolutely independent of the successful or immediate operation of pumps or other machinery. The old method of storing such a supply was by wood tanks, generally built on top of buildings. As these tanks are short lived they soon become, themselves, a menace to the building instead of a protector. The sudden bursting of such a tank has often done as much damage as a fire. The up-to-date method of storing water is by means of a steel tank on a steel tower. We make a specialty of the design, manufacture and erection of these tanks of any desired capacity, in any part of the country, to meet any local conditions. Our tanks are recommended by the Factory Mutual Insurance Companies and endorsed by all of our past customers. We have built about seven hundred towers and tanks in all parts of the country, about 50 of which have been erected for Textile Mills. Every one of these is giving satisfaction. Write for booklet No. 7 which gives a list of all our customers with whom we invite you to correspond. The cut shows a tank which we built for the Belton Cotton Mills, at Belton, S. C. The large tank is kept full at all times for fire protection; the small one supplies water for use in the buildings.

Chicago Bridge and Iron Works

105th and Troop Sts. Chicago, Ill.

Dependable Speed in Reinforced Concrete Construction—the Result of the Gilbreth System



EXTERIOR VIEW OF BUILDING IN COURSE OF CONSTRUCTION.

INTERIOR VIEW OF COMPLETED BUILDING.

We can offer no better evidence of the dependable speed achieved in reinforced concrete construction as a result of the Gilbreth system and the cost-plus-a-fixed-sum contract than the contract which we recently completed for the Minterburn Mills Company, at Rockville, Ct.

This contract called for the erection of a five-story building, 58 x 294 feet, with a 39 x 66 feet dye house forming an extension; a boiler and engine house, 50 x 77 feet 9 inches and a pump house 13 x 23 feet. The buildings are of reinforced concrete throughout, including the columns, walls, girders, beams, floors, stairways, roofs, etc. The floors are designed for a live load of 150 pounds per square foot.

The buildings were designed by and erected under the supervision of C. R. Makepeace & Co., mill enginers, of Providence, R. I., and are the most important examples of reinforced concrete construction in the textile industry.

FRANK B. GILBRETH, General Contractor

EASTERN OFFICE
34 W. 26th ST., NEW YORK

WESTERN OFFICE
604 MISSION ST., SAN FRANCISCO

CONCRETE DEPARTMENT
Unde·writers Engineering and Construction Co., 1170 Broadway, New York

CANADIAN CORRESPONDENT
DOMINION ENGINEERING & CONSTRUCTION CO., MONTREAL

Dependable Speed in Reinforced Concrete Construction—the Result of the Gilbreth System

The owners were badly in need of these buildings and demanded a quick job from us. Every day lost in the completion of the plant meant not only the loss of interest on the investment and the loss of orders that could not be executed—it also meant the loss of customers.

The contract was signed late in September of last year, and actual work was begun on the 10th of October. Despite the trouble we had with the railroads in securing prompt deliveries of material, despite the fact that much of the concreting was done in freezing weather, the entire job was completed in seventy working days. The appended letter from the Minterburn Mills Company is a convincing testimonial to our methods.

EXTERIOR VIEW OF THE COMPLETED BUILDING

Under the cost-plus-a-fixed-sum contract the only preliminaries necessary before work was commenced were a reasonably approximate idea of the cost and scope of the work and an agreement as to the fixed sum.

As a rule, under the cost-plus-a-fixed-sum contract, work is commenced before anything but the ground plan is made. Then, as the work progresses, the plans can be made or changed to suit the conditions of the hour and absolutely without the terror of extras.

THE MINTERBURN MILLS CO
Manufacturers of Woolen and Worsted Goods.
Rockville, Conn.

Mar. 8, 1907.

Frank B. Gilbreth
New York.

Dear Sir.—

Since you have completed our building for us and a final settlement has been made, we think it only just that we give you some word regarding the way we feel toward you.

We were in a hurry for our building and we therefore demanded a quick job. This you gave us by completing the work in 70 working days.

Your methods have met with our approval and your fairness in settlements of all kinds have been most comendable and unusual.

In short you gave us what we wanted in the time we had left for completion and in a way which we like.

Yours very truly,
The Minterburn Mills Co.
M. C. MASON, Treas.

FRANK B. GILBRETH, General Contractor

EASTERN OFFICE
34 W. 26th ST., NEW YORK

WESTERN OFFICE
604 MISSION ST., SAN FRANCISCO

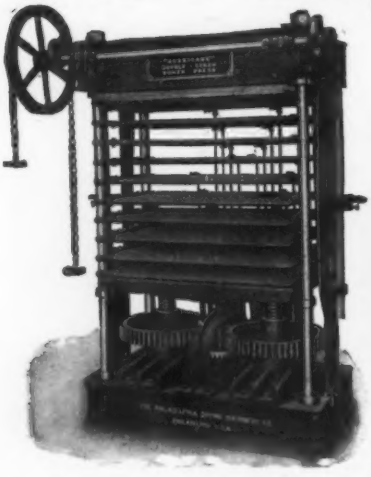
CONCRETE DEPARTMENT
Unde writers Engineering and Construction Co., 1170 Broadway, New York

CANADIAN CORRESPONDENT
DOMINION ENGINEERINC & CONSTRUCTION CO., MONTREAL

"HURRICANE" DRYERS AND FANS

For Wool, Cotton Stock, Yarn, Stockings, Underwear, Etc.

BELT DRIVEN AND MOTOR DRIVEN



Power Screw, Hydraulic and Lever **Presses**

Truck Yarn Dryer.

"Hurricane" Fan, Style No. 2. Write for Catalogues.

COMPLETE EQUIPMENTS FOR DYEING, SCOURING, BLEACHING, CARBONIZING, OXIDIZING, CHROMING, Etc.

PHILADELPHIA DRYING MACHINERY CO.

6721 Germantown Ave., Philadelphia, Pa.

A three minute job

to lace a 5" belt at a cost for material of **one cent** if you use

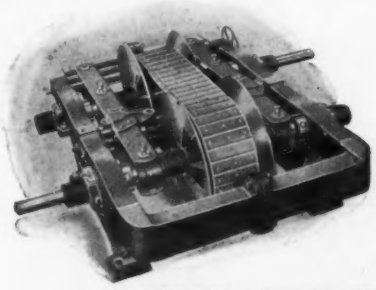
The Jackson Belt Lacer.

The lacing is of coil steel wire, and a 5" connection will sustain 1900 lbs. tensile strain. Other widths in proportion. Joints so compact that they pass over the smallest pulley without pounding, slipping, or strain. A money saver all the time.

Send for Catalogue.

Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

"The Reeves" Variable Speed Transmission



Used to regulate the speed of textile machinery such as tenter frames, driers, dyeing machines, printing machines, in fact any machine requiring variable speed.

INCREASES THE OUTPUT TO THE MAXIMUM

BETTERS THE QUALITY OF GOODS

REDUCES OPERATING EXPENSES TO THE MINIMUM

What more could you ask?

"The proof of the pudding is the eating thereof." Try it.

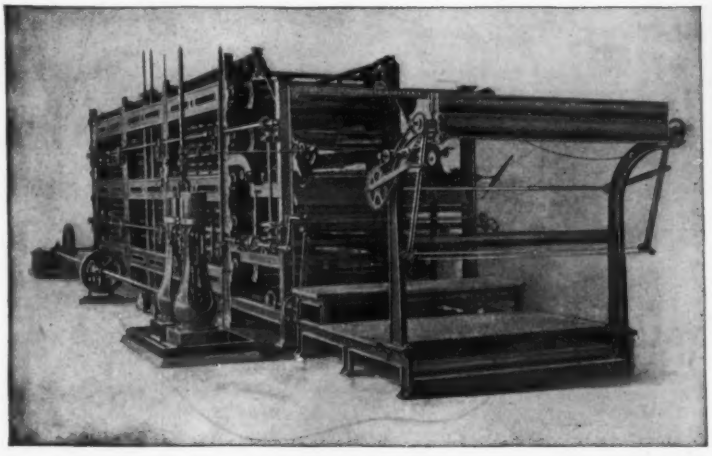
REEVES PULLEY COMPANY
Columbus, Indiana

New England Agents
Cell Drier Machine Company
84 State Street, Boston

New York Representatives
Patterson, Gottfried & Hunter
146-150 Centre Street

TENTERING AND DRYING MACHINES

WITH LOW DOWN FEED. PATENTED FEBRUARY 26, 1895.



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods. Hot Air Drying and Tentering Machines.

Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (Double or Single), Dewing Machines, etc. Crabbing Machines for worsted. Made either single, double or triple.

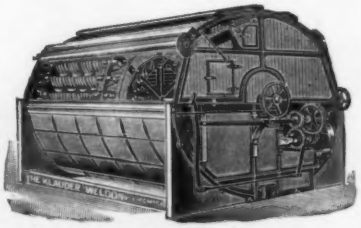
MANUFACTURED BY

D. R. KENYON & SON, Raritan, N. J. Successors to KENYON BROS.

Long Distance Telephone—Somerville 21.

RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTHS' TRIAL
YOU
TAKE
NO
RISK

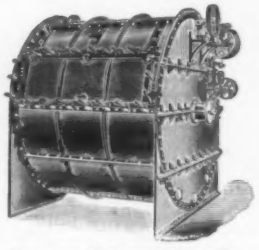


SKEIN AND SLUBBING MACHINE.

THE KLAUDER-WELDON DYEING MACHINE COMPANY

P. O. Box K, AMSTERDAM, N. Y.

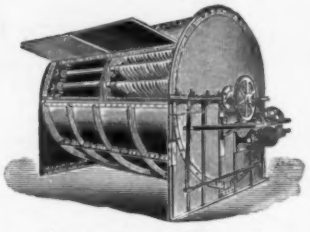
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

Fairbairn Lawson Combe Barbour, Ltd.

Lawson Branch

Hope Foundry. **Leeds, England**

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery

for the Manufacture of

Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

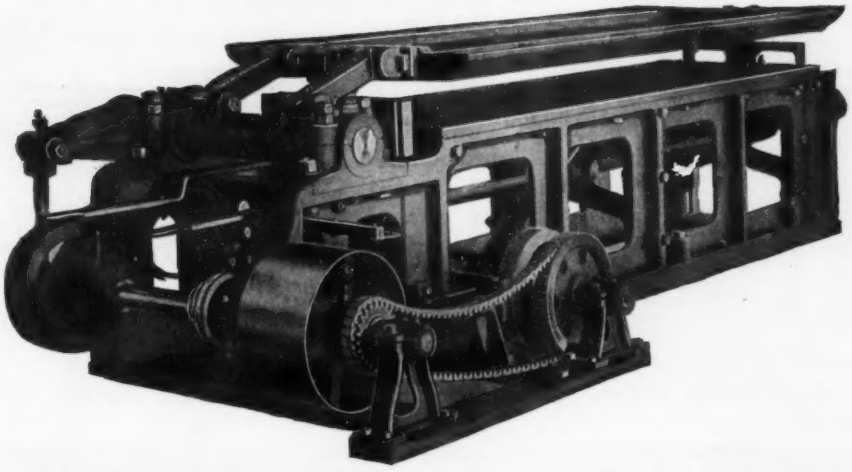
Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

Farrel Foundry & Machine Co.

ANSONIA, CONN.



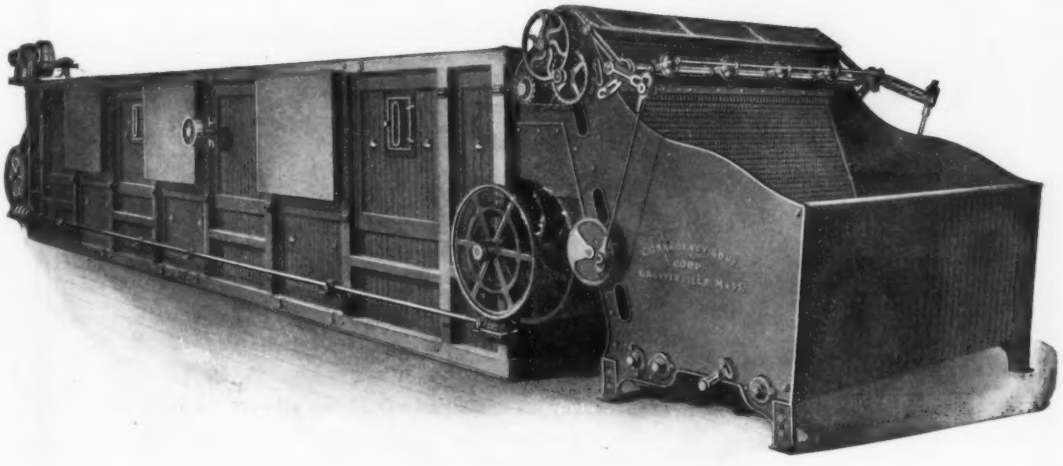
SINGLE AND DOUBLE FELT HARDENERS.

Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
Machine Moulded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

C. G. SARGENT'S SONS

CORPORATION

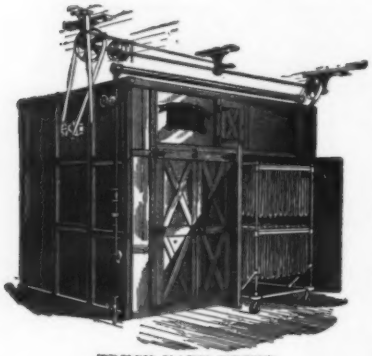
GRANITEVILLE, MASS.



BUILDERS OF

Stock Dryers, Wool Washers, Wool Dusters, Carbonizing Plants, Burr Pickers, Etc.

"20th CENTURY" MACHINERY

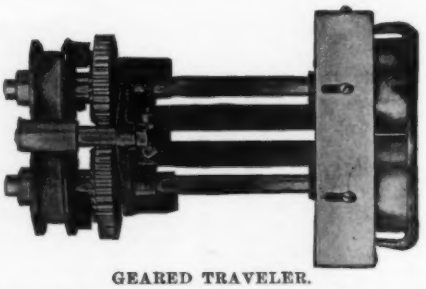


TRUCK YARN DRYER

Dryers for Wool and Cotton Stock, Yarn, Stockings and Underwear.

Carbonizers, Yarn and Wool Scouring Machines.

Ventilating Fans, Bleachers.



GEARED TRAVELER.

We also manufacture Kershaw's Geared Traveler and Improved Web Feed.

Garnett Machines and Pickers. Reclothing or furnish New Metallic Toothed Cylinders and Feed Rolls.

DYEING MACHINES, TOM TOMS, CHROMING, WASHING AND OXIDIZING MACHINES.

AMERICAN DRYING MACHINERY COMPANY,

19th AND WESTMORELAND STREETS, PHILADELPHIA, PA.

Patented in the United States and Foreign Countries.

SEND FOR BOOKLET.

The American

WROUGHT STEEL

PULLEY

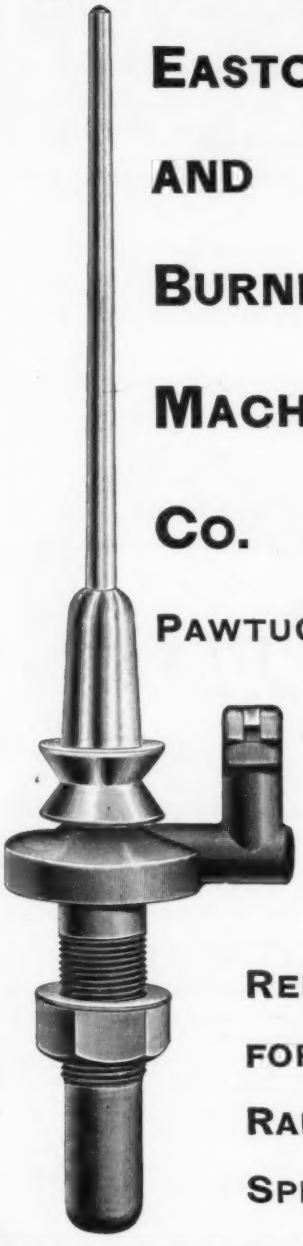
Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly — keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.

Sold by the Leading Supply Houses all over the WORLD.

The American Pulley Co.,

29th and Bristol Streets, : : PHILADELPHIA, PA.

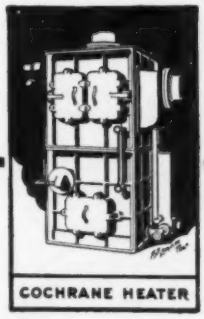
SPINDLES



EASTON AND BURNHAM MACHINE CO.

PAWTUCKET, R. I.

REPAIRS FOR RABBETH SPINDLES



COCHRANE HEATER

DO YOU USE STEAM FOR HEATING OR DRYING?

If you do, *use exhaust steam*, since it is worth as much as live steam at the same temperature, and it costs you practically nothing, having already done useful work in engines, pumps or other apparatus.

There is, however, one precaution to be observed in the utilization of exhaust steam, and that is, to put in the exhaust line a Cochrane Oil Separator (you can bank on a Cochrane Oil Separator), so that cylinder oil will not enter and foul the heat transmitting surfaces of the heating or drying coils or rolls.

After the steam has been condensed, send it back to the boiler by way of a Cochrane Feed Water Heater and Receiver. You will thus save the expense of buying, heating and purifying an equal amount of raw water.

You will also save a large part of the expense of boiler cleaning and repairing, as this hot, pure, distilled water can deposit no scale nor cause expansion and contraction strains in the boiler.

Also use exhaust steam for heating the water that you may need for any other work, such as washing, dyeing, etc., you can do it with the same heater that supplies the boilers. In other words, wherever hot water is wanted and for any purpose, you can get it by utilizing exhaust steam in a Cochrane Heater, thereby saving the coal that would otherwise be required.

Give us particulars about your plant and we will be pleased to make a preliminary lay-out and estimate.

HARRISON SAFETY BOILER WORKS
3158 N. 17th Street, Philadelphia, Pa.

Automatically maintains the best atmospheric conditions

VENTILATION & HUMIDIFICATION
BELL PURE AIR AND COOLING CO.
TRADE MARK

Send for full particulars.

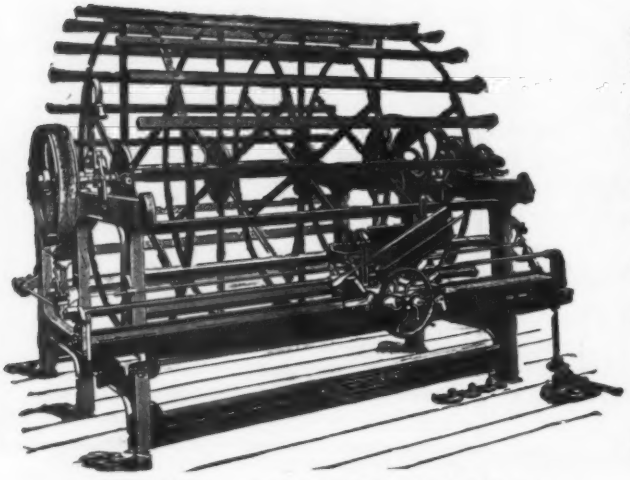
The Bell System keeps properly moistened and purified air in constant circulation, improves ventilation and distributes the moisture equally to all parts of the room. The direct result of this steady and moderate moistening of materials is more flexible and coherent fibre that works uniformly and smoothly, doing away with lots of machine troubles that waste time and spoil tempers. The free circulation of pure air gives operatives increased energy. These improved conditions combine to produce a larger output of a better quality.

Bell Pure Air & Cooling Co., 97-103 Cedar St., New York.

Telegraphic Address: "WHITELEY, HUDDERSFIELD." Nat. Telephone, 598 and 599.

Wm. Whiteley & Sons Ltd.

LOCKWOOD, HUDDERSFIELD.



WARPING MILL WITH PATENT SECTION DIVIDER.

Makers of all descriptions of Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines,

Hydro Extractors. Warp Sizing.

Cool Air Drying and Beaming Machines.

Warping Mills with Patent Sectional Dividing Apparatus.

Self-Acting Mules. Bobbin or Pirn Winder, &c., &c.

Mercerizing Machinery.

Second-hand Tentering Machines in good repair at low prices.

CORK INSERTS

last for years and are very satsfactory

NORTH ANDOVER, MASS., Aug. 17, '07.
NATL. BRAKE & CLUTCH CO.
16 State Street, Boston.
GENTLEMEN:
We had one section of 22 looms equipped with Cork Insert Clutches. We have been running these about five years now and they are very satisfactory. None of them has caused us one cent of expense for repairs.
We also have the sample ring given us by your representative. We will put this on the first loom that gives out, but cannot say when this will be—it might be in six or eight years from now.
Yours very truly,
BRIGHTWOOD MFG. CO.

Cork Insert Fibre Rings

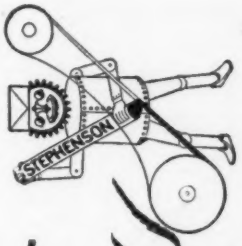
are easily attached to looms now in use and enable manufacturers to get at once the increased efficiency that Cork Inserts give, without the expense of new clutches. **The cost is small, 14" and under, $1.00. Over 14" to 16" inclusive, $1.25. Over 16" special prices.** *Always give outside diameter and width of face.*

SEND A TRIAL ORDER

for "Ready-to-use" Cork Insert Fibre Rings to the Crompton-Knowles Loom Works, Lowell Machine Shop or to the

National Brake & Clutch Co.

16 State Street, Boston, Mass.



Write us for FREE SAMPLE

Red Label for Leather. **Green** Label for Rubber or Canvas.

FOR QUALITY AND ECONOMY
STEPHENSON SETS the STANDARD

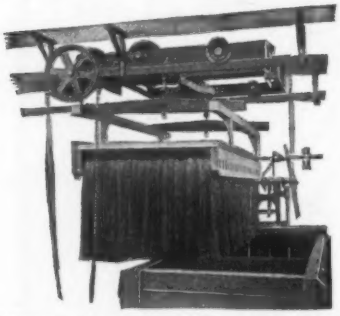
IT'S A COUNTERFEIT
Unless the *Cog Wheel Face* appears on each pound Stick of

Made only by **Stephenson Mfg. Co.** *E. A. Kellogg, Vice-Prest.* **Albany, N. Y.**

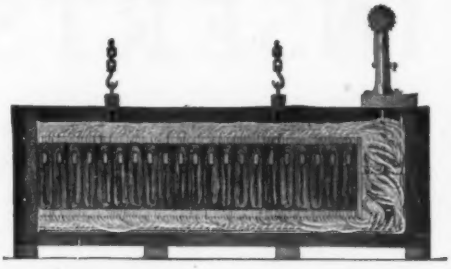
The Hussong Dyeing Machine

Patented Nov. 6, 1900. April 9, 1901. Nov. 29, 1904. June 5, 1906.

THE ONLY MACHINE THAT WILL DYE SULPHUR BLACK SUCCESSFULLY.



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine Suspended.



Longitudinal Sectional View, showing the circulation of dye liquor through the yarn when in operation.

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff, Saving of 75% in Labor, Makes No Waste Whatever, Requires but Little Power to Operate, No Friction on the Material, Leaves the Yarn and Slubbing in its Natural Condition.

Built by the American Dyeing Machine Co., Office 609 Pearl St., Camden, N. J.

BEWARE OF INFRINGEMENTS.

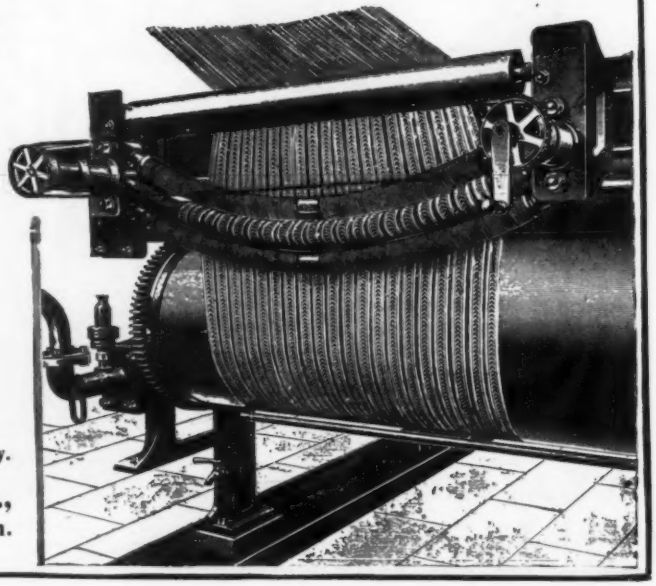
Perfectly Even Tension Both Ways

THIS ideal cloth expander gets the full width of the goods in a most satisfactory way. Can be attached to calenders or cans. Hundreds in use in Great Britain and on the Continent—hundreds more in the United States, with constant satisfaction.

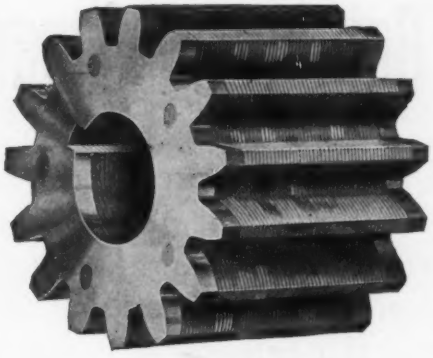
Manufacturers unsolicited say to us, "You have the greatest thing in a spreader ever brought to our attention."

We put them in on trial.
Test it on your own work—'t will pay.

Thomas Leyland & Co.,
60 India St., - - - Boston.



A Noiseless Pinion



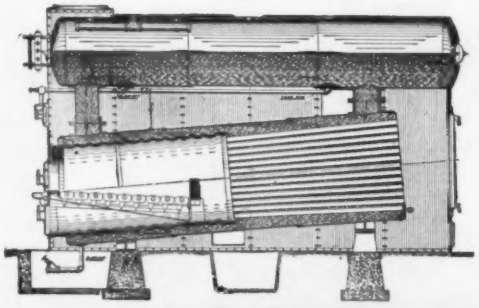
The Durable New Process Kind

This pinion is made up with bronze flanges part of face which is the style of construction which we recommend for very severe service. Our new catalogue shows other styles. Let us send it to you.

The New Process Raw Hide Co., Syracuse, N. Y.

SAVE MONEY

By buying a Robb-Mumford internally fired boiler



Low First Cost

Saving in Fuel

Durable, Safe

Built in all sizes from 60 to 250 horse power.

Send for Catalogue No. 14 on Internally Fired Boilers.

ROBB-MUMFORD BOILER CO.

SOUTH FRAMINGHAM, MASS.

NEW YORK OFFICE: 90 West St. BOSTON OFFICE: 170 Summer St.

Built in Canada by ROBB ENGINEERING CO., Ltd., Amherst, N. S.

Reinforced Concrete Mill Buildings

We are prepared to furnish plans, specifications reinforcement details and supervise the construction of textile mills and industrial plants in general. Mill buildings built of this material are cheaper than the regular mill constructed buildings. We have several now under construction.

ADOLPH SUCK, M. E.
M. Am. Soc. M. E.

Mill Architect & Engineer

179 Summer Street, - Boston, Mass.

Henry Suck, Jr., Arch't. Send for Bulletins. Adolph Suck, M. E.

IRWIN SKYLIGHTS

Strong—Light—Durable—Flexible

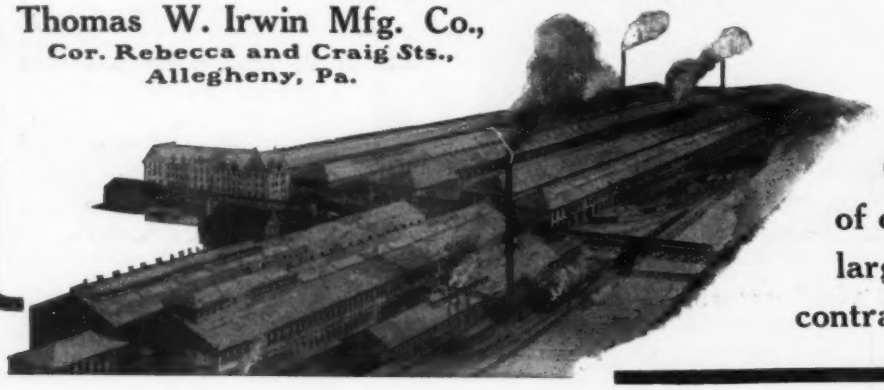
They admit daylight without leaking and are absolutely watertight. They provide for the unequal expansion and contraction of the metal frames and glass, so that the danger of the glass breaking is eliminated. Condensation gutters carry away all moisture by the proper channels.

Large contracts are Our Specialty and our skylights are especially designed to meet all conditions.

Write for Catalogue "Skylights."

We are distributors of Burt Ventilators.

Thomas W. Irwin Mfg. Co.,
Cor. Rebecca and Craig Sts.,
Allegheny, Pa.



One of our large contracts

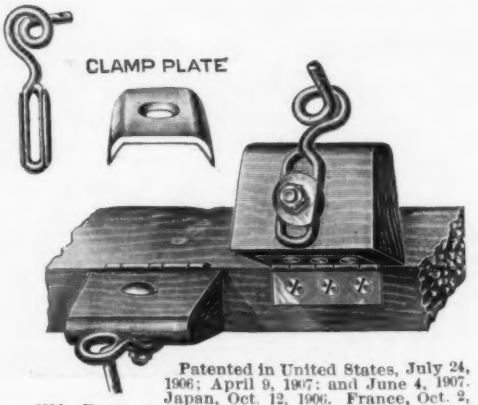
Palmer's Improved Adjustable Thread Guide

This guide supplies an accurate, rigid and permanent adjustment, and is attached to the ordinary spinning frame clapper. It has more merits than any other adjustable guide and at a greatly reduced cost. Perfect adjustment saves broken ends, abnormal wear of the rings, and increases the production and quality. Will soon pay for itself. *Send for free sample and circular.*

Patented and Manufactured by

The I. E. Palmer Co.

Middletown, Conn , U. S. A.



Patented in United States, July 24, 1906; April 9, 1907; and June 4, 1907. Japan, Oct. 12, 1906. France, Oct. 2, 1906. England, Sept. 13, 1906. Spain, July 23, 1906. Belgium, July 24, 1906 and Italy.
Patents applied for in the United States, Germany, Switzerland, Austria, Russia, Poland and India.

SIMPLICITY

THE K-A IDEA

KIP-ARMSTRONG COMPANY

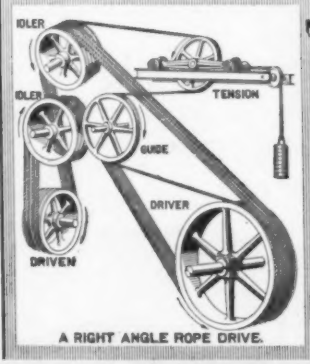
Manufacturers of the
K-A Electrical Warp Stop-Motion
and other
TEXTILE **ECONOMY** DEVICES

New INVENTIONS in Mechanical Textile Devices Developed and Exploited.
Correspondence Solicited.

KIP-ARMSTRONG CO.
Pawtucket, R.I., U.S.A.

BULLETIN ON ESSENTIALS OF ROPE DRIVING

FOR ECONOMICAL DISTRIBUTION OF POWER TO DIFFERENT POINTS OF UNLIMITED DISTANCES FROM THE SAME SOURCE



A RIGHT ANGLE ROPE DRIVE.

"ROPE DRIVING" IS THE METHOD.

LET US SUGGEST A DRIVE

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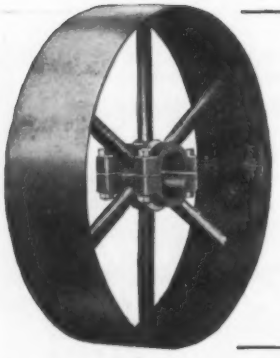
POWER TRANSMITTING MACHINERY
PHILADELPHIA AND NEW YORK

NOW READY FOR DISTRIBUTION. SEND FOR COPY



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THE STEEL SPLIT PULLEY

For High Speeds
Particularly Adapted for Textile Mills

It has few parts, is simple, compact, light and strong. There are no rivets at hub and rim. It is the newest, strongest and best steel pulley. Ask for circular.

Sold by leading Supply Houses

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PITTSBURG, PA.

Albany Grease

LOOK FOR YELLOW LABEL.

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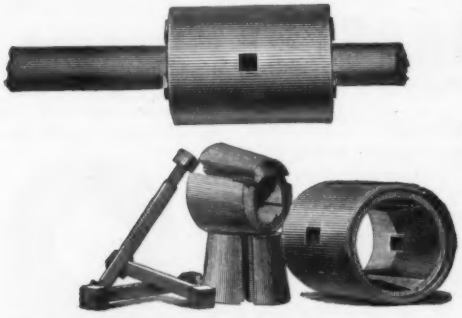
Is the Best, Cheapest, Cleanest and Safest Lubricant.
Does not Drip, Splash or Waste Away

Can be used in any style grease cup on the market because it **will not gum, freeze** or **leave a sediment.** **Is free from impurities** and uniform in quality

Send for FREE sample cup and can of "Albany Grease" giving diam. of oil hole, depth of oil hole from top of cap to journal, where to be used and firm's name.

Adam Cook's Sons, 313 West St., New York



THE "SELLERS" MAKE OF

• DOUBLE CONE VISE COUPLING

has a way of holding shafts together, that no other COUPLING can equal.

WILLIAM SELLERS & CO., INCORPD.

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Makers of

SHAFTS,
COUPLINGS,
PULLEYS,
HANGERS,

and all most approved appliances for the Transmission of Power.

SEND FOR CATALOGUE AND PRICE LIST.

MACHINE TOOLS.
INJECTORS. POWER CRANES.

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Furnishes the Electrical Apparatus for driving and lighting all classes of

TEXTILE MILLS

This Company has installed more than 75% of the total horse power used in the electrically driven textile mills of the United States. Information given and estimates furnished at any office.

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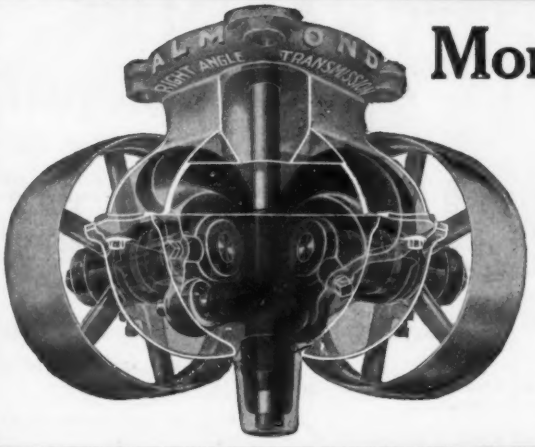
NEW YORK OFFICE, 44 Broad Street. BALTIMORE OFFICE, Continental Trust Bldg.
PHILADELPHIA OFFICE, 218 South Eleventh Street. ATLANTA OFFICE, Empire Building.

717



More Floor Space

You can turn idle floor space into productive floor space by properly arranging machines with the aid of an

Almond Right Angle Transmission

A clean and noiseless right angle drive. Does away with objectionable mule pulley stands and noisy bevel gears. Will send catalog on request.

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BARNSLEY, ENGLAND.

Absolutely secure combination of Shield and Bobbin guaranteed.

Loose Shields Impossible.

Specialties: PATENT "LOCKFAST" and "CLIMAX" Shields. ENAMELLED CONDITIONING BOBBINS, Impervious to Steam, Moisture or Oil.

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Added Strength and Absolute Security.

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ESPECIALLY ADAPTED FOR MILL USE.

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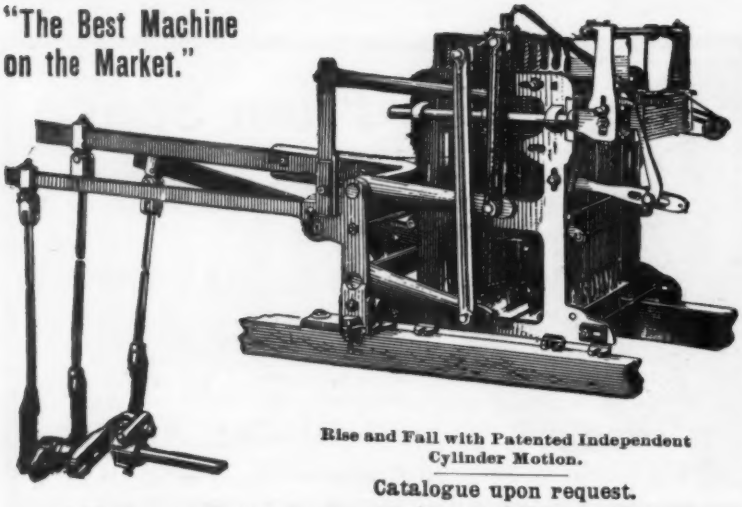

Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

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HALTON JACQUARD

Original Fine Index Machines

Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder,

THOMAS HALTON'S SONS,

Allegheny Avenue and C Street,

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Representative
H. A. Forbes, Paterson, N. J.

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AMERICAN MOISTENING COMPANY

79 Milk Street, Boston, Mass.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"Simplicity and Originality of Design."

Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty year receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDLALS and others.

The Only Perfect System of Air Moistening

And Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for Booklet "T" on Humidification. Legal Proceedings will at once be taken against infringers and users of infringements.

J. S. COTHRAN, Southern Representative, Trust Bldg., **CHARLOTTE, N. C.**

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Mill Sewing Machines

No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

DINSMORE MANUFACTURING CO.,

Salem, Mass., U. S. A.

Overhead Industrial Railways

with chain blocks or electric hoists as the lifting mechanism solve the handling problem in warehouse, machine shop and factory. Can often be arranged to handle raw material from receipt, during all processes of working, and the finished product up to the point where it is loaded and shipped.

You can see how the idea works with a short I-beam tramway and a hoist or two.

One of our salesmen will be glad to call on you and give you the benefit of his hoisting experience.

Yale & Towne Mfg Co.
9 Murray Street
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Used more generally and extensively than all others

"BRETON" BRAND OF OILS

are adapted for all kinds of wool batching

Let us know what your work is and we will send you the oil best adapted for your needs. Payment subject to satisfactory trial and approval.

BORNE, SCRYMSER COMPANY,
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BRETON OIL FOR WOOL TRADE-MARK

Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs.

Adjusts itself to an uneven load, runs without vibration. Unusual capacity for high-class work.

Send for Catalog.

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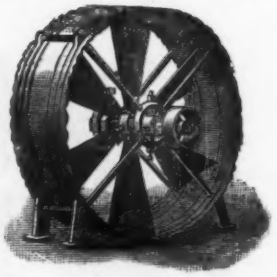


Moves more air than any other fan made. Very efficient under widely varying conditions. Noiseless and does not obstruct the light.

Lane Canvas Mill Boxes, Baskets and Trucks

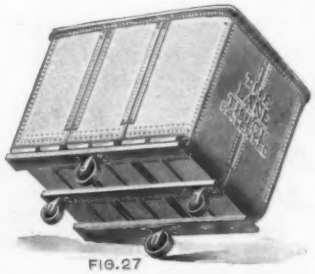


FIG. 27

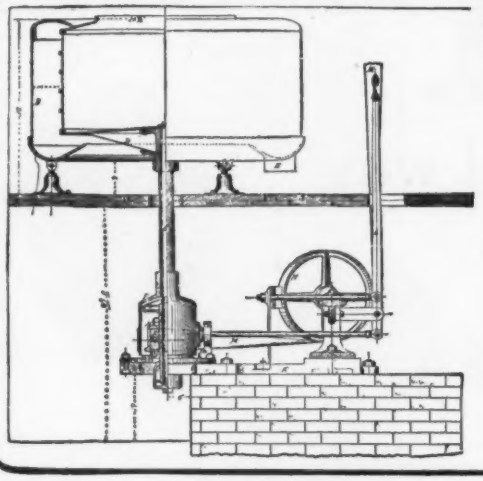
Superior in quality of material and workmanship. Unexcelled for the various uses of a textile mill.

Can be purchased through all leading supply houses.

Catalogue No. 33 with discount sheet on application.

Manufactured only by

W. T. LANE & BROTHER
Office and Works, POUGHKEEPSIE, N. Y.



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Special Machines for Acid Work.

SHAFTING, PULLEYS,
FRICTION CLUTCHES, Etc.

American Tool and Machine Co.,

Incorporated 186[illegible] Founded 1845.

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Morris Duck Steaming Baskets

are baskets of quality

Built to fit your steam box

in three styles—round, square and oblong. Constructed to withstand long and hard service. Very light and easy to handle. Brass eyelets used throughout — arrangement and quantity to suit *you*. Save a portion of your basket money—use Morris Baskets — the kind other representative mills are using.

Catalog No. 6-A gives the details.

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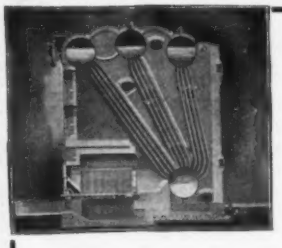
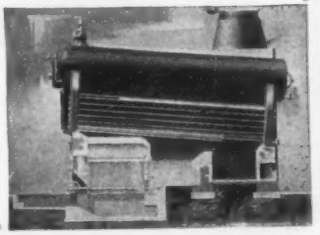


The Murphy Automatic Smokeless Furnace

Burns Slack with Great Economy

The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.



SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

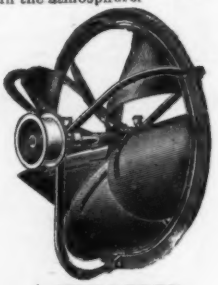
MURPHY IRON WORKS

DETROIT, MICH.

Drying textiles the Berry Wheel way saves $ $ $

The quick and certain way of extracting moisture from all kinds of fabrics. Used by hundreds of textile manufacturers. When *you* want to get the best results get a Berry Wheel.

This is our Berry Wheel, the most effective agent for moving air, eliminating steam and other impurities in the atmosphere.



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For QUALITY OF FINISH
For QUANTITY of PRODUCTION
HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

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THE ONLY ECONOMICAL SYSTEM OF INSULATION FOR UNDERGROUND PIPES

When PORTLAND SECTIONAL CONDUIT is used, the underground piping system is brought to the highest efficiency and economy.

Wood conduit soon rots, and, like brick tunnels, is highly inefficient.

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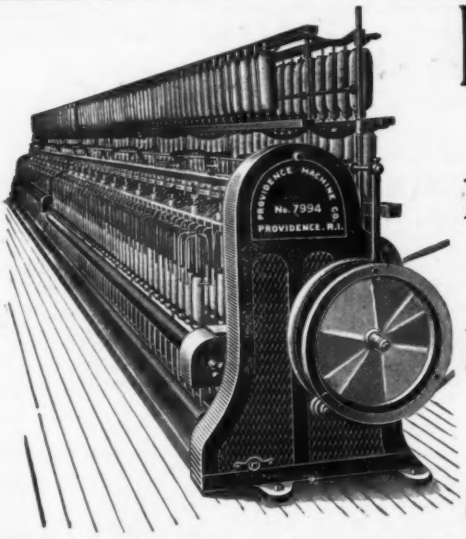

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Manufacturers of

Improved Cotton Roving Frames

Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

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ESTABLISHED 1841

COPPERSMITHS

STEAM JACKET KETTLES

Guaranteed to stand 150 lbs. cold-water test.

Equal, if not Superior, to any in the market

66 Pitts St.
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It Attracts Universal Attention Because it is THE BEST

BADGER'S

Fire Extinguisher

Has taken the lead in the United States, and is everywhere recognized for its efficiency. After competitive tests, lasting more than one week, THE UNITED STATES GOVERNMENT placed an order for 1,200 of

BADGER'S THE LATEST AND MOST APPROVED

Automatic, Chemical, Hand Fire Extinguisher Made

BADGER FIRE EXTINGUISHER CO.

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Crabbing, Steam Finishing, Opening and Folding, Tacking, Sewing, Squeezing Machines

BIRCH BROTHERS, SOMERVILLE, MASS.

ALBERT BIRCH, TEXTILE MECHANICIAN

Bleaching and Napping Machinery

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

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ASA LEES & CO., Limited,

TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

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PICK CLASSES, LEATHER APRONS, PATENT WIRE CHAIN APRONS.

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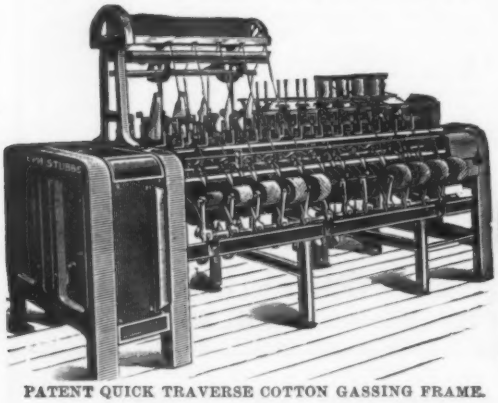
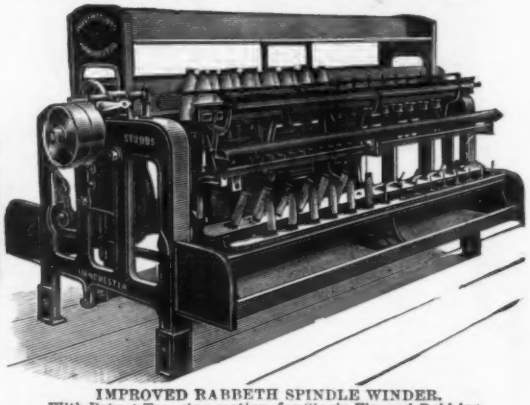
SPECIAL MACHINERY

For Winding, Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



IMPROVED RABBETH SPINDLE WINDER.
With Patent Tapering Motion, for Single Flanged Bobbins.

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DOBBINS' ELECTRIC SOAP, ABSOLUTELY PURE AND UNIFORM.

Dobbins' Hard Water Soap, a Specific for Hard Water or Water Charged with Chemicals.

AMMONIATED POTASH SALTS FOR SCOURING.

Dobbins' Palm Oil Fulling Soap. Dobbins' "Fast Black" Soap. Pure Olive Oil Potash Soaps.

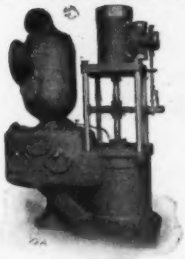
FREE SAMPLE SENT FOR TRIAL ON REQUEST.

DOBBINS SOAP MANUFACTURING CO., 119 SOUTH FOURTH STREET, PHILADELPHIA, PENN.

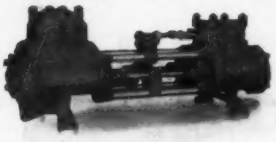
DEAN BROS. STEAM PUMP WORKS

INDIANAPOLIS, IND.

DUPLEX PUMPS, SIMPLE PUMPS
ATLANTIC BOILER FEEDERS
JET AND SURFACE **CONDENSERS** ELECTRIC PUMPS BELTED PUMPS, Etc.



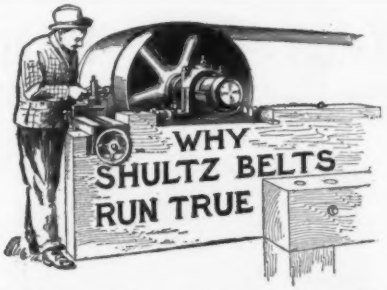
VERTICAL AIR PUMP AND JET CONDENSER



DUPLEX DURABLE PUMP

SIMPLE PUMP

TWIN AIR PUMP AND CONDENSER



"Sable" rawhide or "Aqua" waterproof belts never shift from side to side as the sections of belt come in contact with the pulley. This is because we take the stretch out by giving each belt a running test under great strain, and then, while the belt is still running, trim the edges with knives set like a lathe tool.

Try "Sable" Belting on your most troublesome drive.

For drives exposed to water, steam, acid fumes, or oil drips, Shultz "Aqua" is the belting to use.

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Makers of "Sable" Rawhide and "Aqua" Belting, also Belt Dressing, Cement and Lacings.

WEAR LEATHER WELL PACKINGS

Are made from the very best grade of leather for use in Hydraulic and Compressed Air Machinery.

We want the privilege of proving to you that we can save you money on Leather Packings, regardless of what make you are using or if you are making your own packing.

Our illustrated booklet will be mailed free on request and samples submitted.

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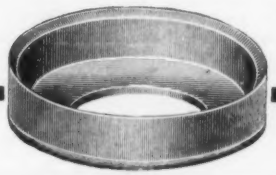
Detroit **Michigan**



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FOR EVERY SERVICE

Are by far more economical in operation than a steam pump for Boiler feeding, mines, vacuum, hydraulic pressure and water works.

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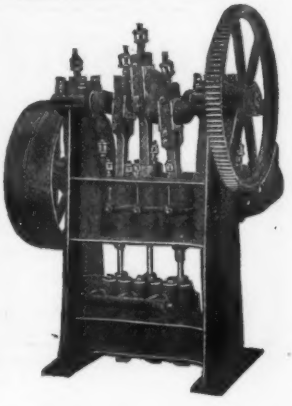

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CONCRETE BLOCKS

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19 Federal Street, Room 58 Boston, Mass.

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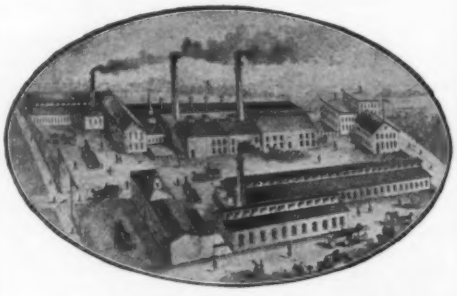
Germantown Dye and Bleach Works



Dyer and Bleacher of Cotton Warps and Mercerized Yarns, Woolen and Worsted Skein Yarns, Eiderdown Cloth, Fine Worsteds for Dress and Knit Goods, Cotton and Woolen Hosiery.

Sample Cards Sent on Application.

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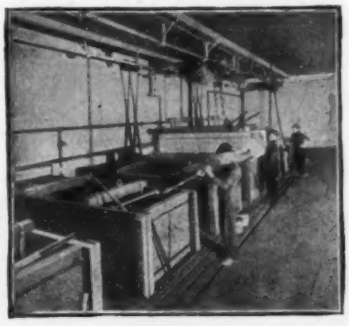
Waters' Dyeing Machine

This cut shows a new and useful machine patented by D. F. Waters for the dyeing of any color on Worsted, Woolen, Cotton and Merino Yarns.



Being successfully operated by some of the largest manufacturers in the country.

The saving of labor will more than pay for a machine in a few months.

Capacity; 2,000 lbs. a day per man.

Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

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Floor planks treated by our process are laid just like an ordinary floor and are so long lived that they are ideal for Dye Houses, Wet Finishing Rooms or wherever processes keep the floors wet. Creosoted Flooring retains all of its original strength, never rots under any conditions and does away with the expense and annoyance of frequent renewals. It's a saving and satisfactory solution of the floor problem. Tell us the style, width and thickness of your flooring, the quantity required, and we will tell you what it will cost.

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SPINNING RINGS.
TWISTER RINGS.
RING HOLDERS.
TRAVELER CUPS.
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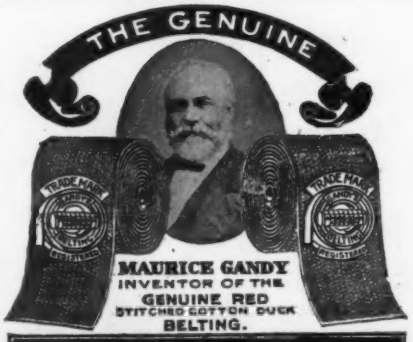

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It is made from a fine grained specially woven Cotton Duck, widths being woven for each size belt, thereby insuring a selvage and consequently even strain, on both edges. It has no honeycomb stitching, all rows being perfectly straight and sewn under tensions from end to end. By an original device all parting or splitting of ends is obviated, thereby doing away with air puffs. It costs only about one third as much as leather belts, and lasts several times longer. Had'nt you better look it up?

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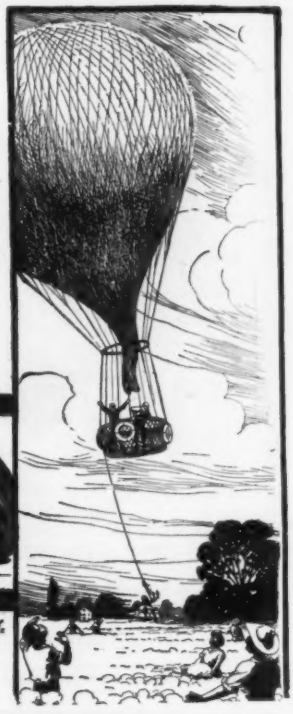

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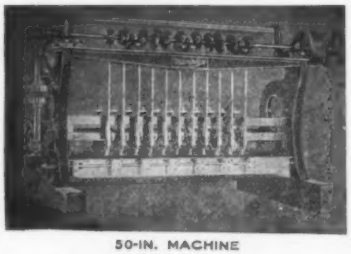

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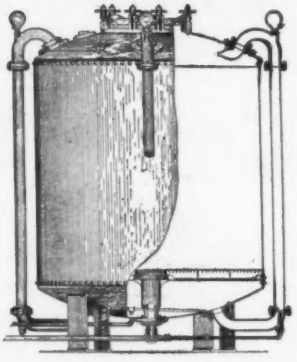

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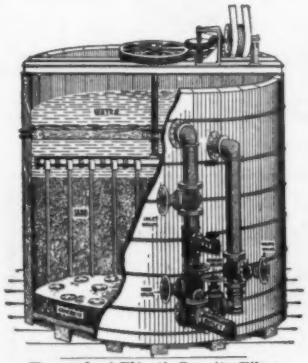

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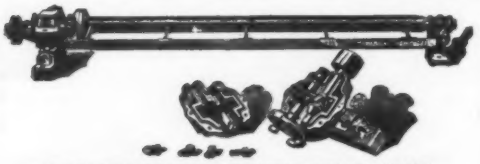

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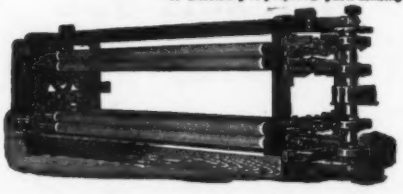

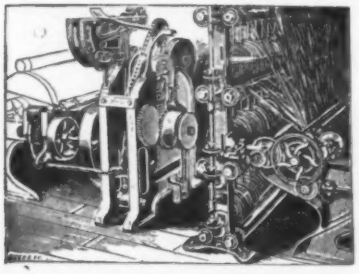

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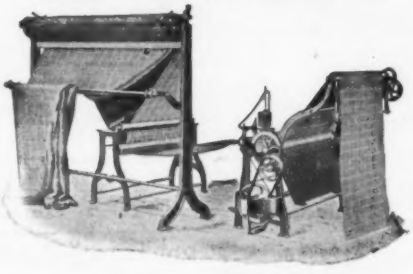

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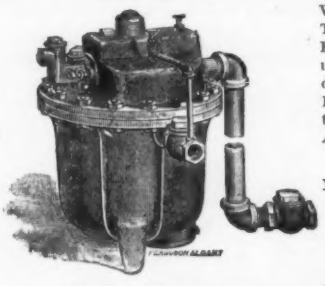

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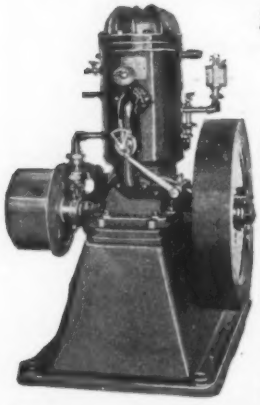

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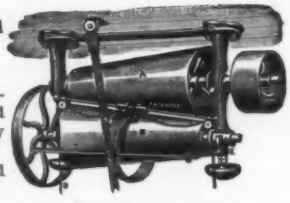

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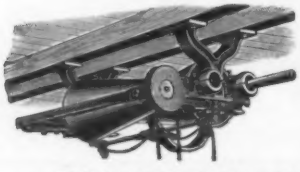

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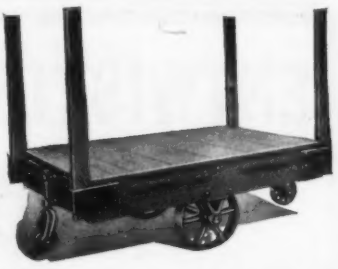

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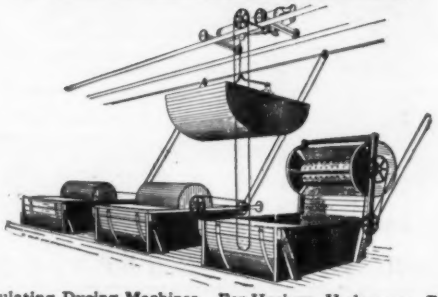

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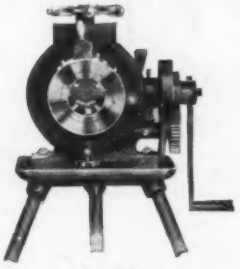

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One man threads 6 inch pipe.

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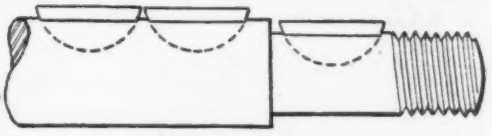

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Made of paper and wood,
Needs no covers,
Will not split
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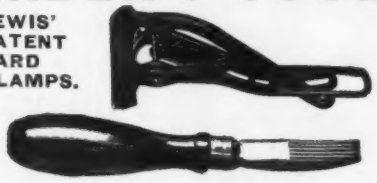

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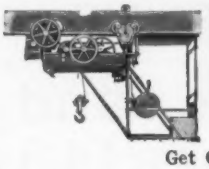

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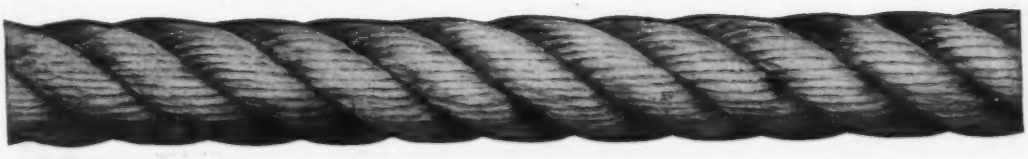

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144 Congress Street, Boston,

Publication and Editorial Office

119 South 4th St., Philadelphia. 123 Liberty St., New York. 463 East 42nd St., Chicago.

Entered at the Boston Post Office as Second-Class Mail Matter.

SAMUEL S. DALE, Editor.

Subscription and Directory Rates.

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The Textile World Record, without the **Directory**,	$2.00 per year
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PART I. Contains a complete directory of all the textile establishments in the United States and Canada. It tells what goods are made, the number of sets of cards, spindles, looms, whether and what they dye or finish, steam or water power, who the selling agents are, the names of the officers, superintendent and buyer.

There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains Classified List of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers' names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a speciality of textile interests.

PART VI. Buyers Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

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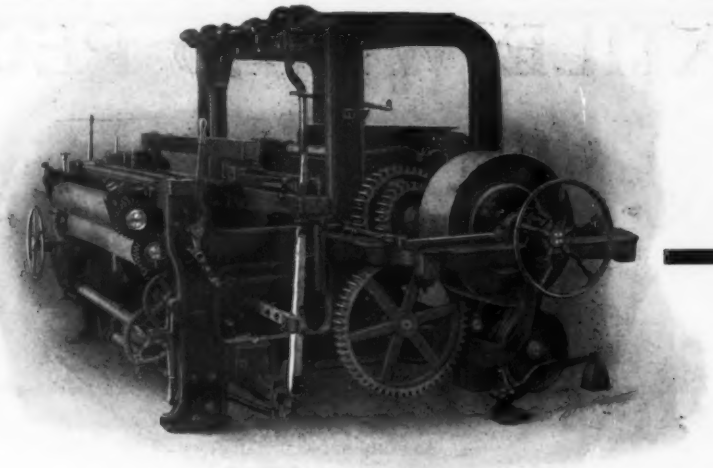
is published early each year by LORD & NAGLE CO. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendant and buyer, class of goods made, the machinery, including number of knitting machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.



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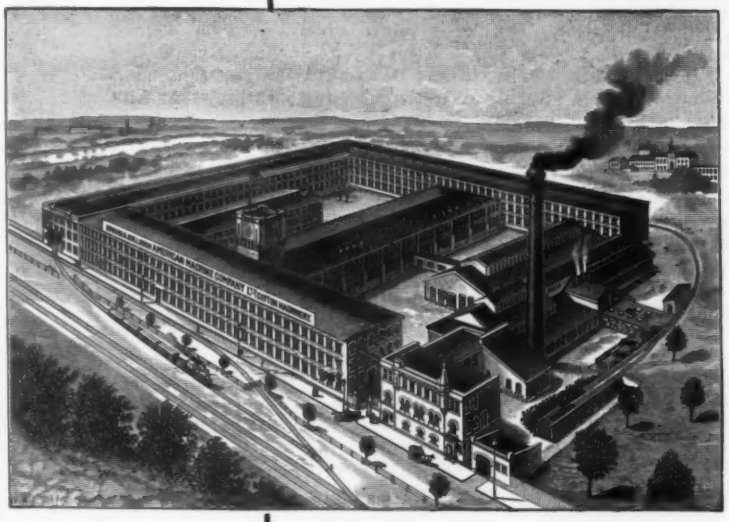

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The Textile World and Textile Record.

VOL. 33 (NEW SERIES.) September, 1907 No. 6

Monthly Comment.

Watching for the Flood.

Having, by means of the recent tariff agreement, partially broken down the tariff barriers against their exports of manufactures to the United States, the Germans are now eagerly awaiting statistics of the trade under the new conditions in order to determine how much the arrangement is worth to them. They are a practical people and want to see the results of their diplomacy expressed in marks and pfennige. This desire was thus expressed in a recent issue of the Berlin "Textil-Zeitung":

> The first of July brought about a small but not unfavorable change in our trade relations with the North American Union. The present quarter will show of what value the new trade arrangement with the United States is for us, and if it is really to bring the hoped for amelioration of the American Customs Administration in which Count Posadowsky saw the kernel of the new agreement. How slight a value the Americans themselves place on their concessions to us is shown by their giving them away to the whole world; that is, extending them voluntarily to all countries without requiring any trade concessions in return. What we have obtained with great difficulty and by making important concessions falls gratis into the laps of our competitors.

The "Textil-Zeitung" is correct in its statement that the Washington government has voluntarily granted to other countries the concessions made to Germany under the recent agreement. It will, however, find itself mistaken in the assumption that the concessions are valued lightly in the United States. During the next few months statistics of German goods imported into the United States will be studied here as well as in Germany, and before another summer an effort will be made to determine whether the American tariff is to be revised secretly at Berlin or publicly at Washington.

Of course, the following from one of our friends in Manchester, Eng., a gentleman prominent in the English cotton trade, expresses a general feeling of amusement in foreign lands:

> Your reply to Mr. North is effective, but I cannot help feeling amused to think that the Germans have "bested" your Washington folks, who are themselves the cutest of the cute. When are you coming over again?
>
> Yours faithfully,

The German agreement after all has its compensation. It has contributed to the gayety of nations. Americans are not sharing in the jollification, that is, not yet. Come to think of it the agreement is not a treaty, nor statute law, nor common law, just an ordinary interpretation or misinterpretation of the law, by executive officers clothed with authority not little, but brief. Let us cheer up. Our chance to laugh may come soon.

Improving Japanese Raw Silks.

The following letter was recently received by the Silk Association of America from the Japan Silk Association at Tokio:

Dear Sir: I beg leave to inform you that the Japan Silk Association, which you are no doubt aware is a large body of the people interested in the silk industry of this country, under the auspicious patronage of His Imperial Highness Prince Fushimi, has recently compiled a book showing the trade-marks of those Japanese raw silk producers who are each employing 100 operatives and upward, respectively, a copy of which I have the honor of sending to you, with my compliments, under separate cover. I hope you will be good enough to show the publication to the people interested in the silk-weaving industry in your country, and, should our raw silk imported into your country be found defective in any way for the purpose intended, I hope you will be good enough to point out to us the trade-mark of that particular raw silk, with full particulars and sample thereof, and then the Japan Silk Association will always welcome your suggestions, and doing all in its power to warn our raw silk producers against such defective points, will prevail upon them to introduce such improvements as you may desire.

Should this means prove a factor to augment our trade, etc., . . .

Yours very respectfully,
Baron M. Matsudaira,
President.

In accordance with this request the American Association has asked its members to report any defects they may have noticed, naming the chop in order that the fault may be located and remedied. The enquiry has been extended to include China, Canton and European silk, as well as Japan.

Direct Trading in Cotton.

The following extract from a private letter that we recently received from a firm in M. Gladbach, Germany, illustrates a general desire on the part of the European cotton trade to establish more direct business relations with the producers of cotton in the South:

We are raw cotton agents and are looking for direct connections with American exporters' or planters' associations. We could sell direct to German spinners from 20,000 to 30,000 bales for the right firm. We would thank you very much for any hint as to what steps should be taken to establish such a connection. We are aware that many first-class American houses are looking out for direct connections with the spinners on this side.

While the desirability of more direct methods of marketing cotton is generally admitted, there are many practical difficulties to be surmounted before that result can be brought about. It has seemed to us that the greatest difficulty in bringing about closer business relations between planter and spinner arises from their being strangers to each other. The simple and obvious remedy is for them to get acquainted. It was with this idea in mind that we urged at Atlantic City a conference between planters and spinners, a suggestion that materialized in the First Cotton Conference at Washington last year, and it was with the same idea that we sent this reply to our Gladbach correspondent:

As to your request for information regarding direct connections with America in the cotton trade, why would it not be a good plan for you to attend the cotton conference at Atlanta next October? You will find an account of this conference on page 68 of our August issue. The principal object of these meetings is to bring spinners and planters into closer business and social relations with each other. About one hundred representatives of different European countries have already announced their intention to be present and it is expected there will be fully one thousand at the conference, representing every branch of the cotton trade from the planter to the manufacturer. It will afford you an excellent opportunity to meet cotton planters, brokers and spinners, and I think it would help you to make satisfactory connections by which you could buy cotton direct in the South. The acquaintances made there could not fail to help you.

Our Woolen Industry.

On the theory that deliberate misrepresentation deserves censure, while ignorance should excite compassion, it is difficult to determine whether the writer of an article entitled "Our Suppressed Woolen Industry," in a recent issue of the "New York Journal of Commerce," should be pitied or blamed. He begins with this:

"The position of woolen manufacturing in this country is humiliating."

Our position is that of 90,000,000 people whose per capita consumption of wool (59 ounces) is three and one-half times that of the rest of mankind outside of the tropics. We consume annually woolen goods valued at $403,255,240, of which 94 per cent. is manufactured at home by mill operatives at the highest wages paid in the woolen mills of

any country on earth. There is nothing very humiliating in this state of things. On the contrary it is calculated to excite pride at home and envy abroad.

Perhaps the "Journal of Commerce" does not know of these facts. At any rate it ignores them and explains that its humiliation arises from our lack of an export trade in woolens:

> The reason for the languishing condition of this great (woolen) industry in this country is undoubtedly the duties on the raw material. If now the duty (on wool) were removed . . . there is scarcely a doubt that the manufacturing industry would develop rapidly and we should be exporting woolen goods to no insignificant extent, especially if we had a reasonable reciprocal arrangement with Canada.

The "Journal of Commerce" deserves a certain amount of credit for not claiming that under free wool we could export woolen goods to England where woolen mill wages are less than half the American rate, or to Germany where mill operatives are striking for 43 cents a day and living on—well, on most any old thing they can get to eat, or to Japan where wages are 10 cents a day, or to China where wages are still lower and the people do not wear woolen clothing to any extent. The "Journal of Commerce" writer makes none of these claims, all of which have been made by other and bolder political economists. His remedy for the condition that he finds so humiliating in our woolen industry is free wool and reciprocity with Canada. If the "Journal of Commerce" man is right in his estimate of the Canadian market for woolen goods, the Canadian woolen industry must be enjoying a high degree of prosperity, for it has free wool and free access to the Canadian market. As a matter of fact, however, Canada imports annually $14,000,000 worth of woolen goods or $2.50 per capita as compared with woolen imports into the United States at the rate of 25 cents per capita. As a result the Canadian woolen industry is nearly extinct, strangled by the preferential tariff on British goods.

It is, therefore, into this limited market, supplying only 6,000,000 people and already glutted with cheap English goods, that the "Journal of Commerce" thinks we could "export woolen goods to no insignificant extent, if the duty on wool were removed and we had reciprocity with Canada." Nor is this all, for he tells us that

> It is altogether probable that the quantity of domestic wool consumed would be materially increased and the demand for mixing might keep up the price.

That is, the removal of the duty from wool will lower the price of wool to manufacturers who have to buy it and raise the price for wool growers who have it to sell. But we will not attempt to follow the "Journal of Commerce" man further in his flights of fancy. Perhaps after thinking the matter over he may conclude to turn back.

Foreign Trade in Textiles.

Of the total foreign trade of the United States, $3,288,975,381, for the year ending last June, $903,194,279 or 27 1/2 per cent. consisted of products of the textile industry, the latter being classified as follows:

	Imports.	Exports.
Cotton, raw	$20,973,255	$484,447,981
Manufactured	73,704,636	29,938,958
Fibers, raw	42,239,358	....
Manufactured	67,422,458	8,308,112
Silk, raw	71,683,015	....
Manufactured	38,653,251	....
Wool, raw	41,534,028	81,112
Manufactured	22,050,121	2,239,106
	$378,260,122	$524,934,157

Reducing this to two classes, raw and manufactured products, we have:

	Imports.	Exports.
Raw	$176,429,656	$485,529,093
Manufactured	201,830,466	39,405,064
Total	$378,260,122	$524,934,157

A striking feature of this trade is that we import more than five times as many manufactured goods as we export. The figures given represent the foreign valuation. Estimating that the domestic value is 50 per cent. above the foreign, the yearly imports of textiles are found to equal $302,745,699. Taking the 1905 textile census as a basis the manufacture of this quantity of goods would give employment to 184,152 mill operatives. This is 60 per cent. of the number employed in all the cotton, woolen, worsted and silk mills in New England; it is three-quarters of the number employed in the mills of the Middle States; and it is 45,-

768 more than are employed in all these mills in the South. Rating our imports of textile manufactures by the number of people required to make the goods will perhaps give a new and better idea of the heavy volume of merchandise now coming to the United States.

A great deal is said about capturing foreign markets, but it is the home market that deserves attention first. At the present time the textile operatives throughout the country are steadily employed, and the influx of $300,000,000 of textiles carries with it no hardship. Immigration, however, is proceeding at the rate of 1,300,000 a year, and it is easily possible that a period of business depression might make it very dsirable to have employment at home for 180,000 mill operatives.

The exports of raw cotton for the year made a new high record in respect to quantity, 8,721,303 bales, as well as value, $482,081,527. The sale of our surplus cotton is an important item in the national income. It is not improbable that with the growth of the country the increased consumption at home will leave less to be exported. This will depend, however, on the ability of the South to increase the crop. The increase in the home consumption is as certain as anything can well be. The doubtful factor is the increase in the supply. If the world's crop fails to keep up with the demand the foreign manufacturers will be placed in a serious predicament. A large proportion of the consumers of their products are poor and unable to pay any material advance. The decreasing surplus of American cotton will cause the price of the raw material to advance. Thus the foreign manufacturer will face the problem of high priced raw material and low priced goods. The American manufacturer will also face high priced raw material, but his remedy is found in a commensurate advance in the price of goods, made possible by the greater purchasing power of the American consumer.

Assuming then a deficiency in the cotton supply, the struggle for the material with which to clothe mankind will narrow down to competition between the American consumer on one side and the foreign consumer on the other. The cotton will go to the highest bidder.

It is this condition that makes the question of the cotton supply of so much importance to the foreign manufacturer. He is alive to the danger even now when a period of great prosperity is calculated to create a sense of security. There are already signs of the coming struggle. The decrease in cotton goods exported from the United States, from $53,000,000 in 1905 to $32,305,412 in 1906, is the result of the high prices prevailing at home, making the Chinese trade unprofitable. It is a preliminary skirmish in which the Chinese abandon the field to the American consumer. Another indication of the contest is the increasing tension between the spinners and weavers of Lancashire. The spinner is forced by the high price of cotton to raise the price of yarn. This has forced the weaver to stop his looms because it wipes out the profit of manufacturing. An even greater advance in prices has as yet no perceptible effect on American mills, because the consumer is able to pay the price.

The Real Danger.

The most objectionable feature of the present agitation for a revision of the Dingley tariff is found in the efforts of certain free trade newspapers to influence public sentiment on a question bristling with technical problems with which the newspaper writers have no acquaintance. A striking example of this is found in the following comment on the facts in the sewing thread trade, by the Springfield Republican:

"The question forces itself why any customs duty on cotton thread should longer be maintained in this country under existing circumstances.

"The implication is thrown out in the wages statement that it costs two or three times more to make cotton thread in the United States than in Great Britain. But if that is so, what kind of a management does the thread trust possess that it should strive to manufacture in the United States when prices can be had here three cents higher than in Great Britain with only a one cent tariff to jump?"

The writer of those lines from the Republican makes the wholly inexcusable mistake of thinking that American-made thread costs

from two to three times as much as British-made thread because American wages are two to three times as high as British wages. He ignores the fact that the raw material costs the same in both countries and that other items may vary but little. Suppose for example that the cost of an article in the United States and Great Britain is as follows:

	United States.	Great Britain.
Raw material,	80	80
Labor in the mill,	40	20
Total,	120	100

The cost of labor in one case is double that in the other, yet the cost of the finished product is but 20 per cent. greater in consequence. So it is in the case of sewing thread where a duty of 1 cent a spool or one-third of the British price more than compensates for the increased cost of labor, which is two to three times as high in the United States as in foreign countries. Such relations between tariffs and wages are self evident, and the demonstration we have given would seem to be superfluous in a kindergarten. Nevertheless they appear to be needed in the editorial office of the Springfield Republican. During the next three or four years when tariff agitation is certain and tariff revision probable, the real danger will be found in the influence of such newspapers as the Springfield Republican, which possessing a high reputation that is in many respects deserved, brings only ignorance and prejudice to bear on the solution of the technical problems connected with a revision of the tariff.

Nigerian Cotton.

On Aug. 22, the British House of Commons passed a bill authorizing the construction of a railway 400 miles long running into Upper Nigeria. The enterprise is to be financed by the government and it is estimated the railway will be completed in 1911. While the chief reason advanced by the government for constructing the road was the strategic necessity for rapid transportation of troops and supplies in governing the country, it was brought out in the discussion of the bill that the development of cotton growing in Nigeria was an additional and important object. The following extract from the discussion of the bill refers to this point:

Sir G. Parker: This railway, it was noteworthy, represented high protectionist policy.

Mr. Lupton: No.

Sir G. Parker: He was glad it did not infringe on the honorable gentleman's free trade principles. This was, however, undoubtedly a system of subsidy by which before they had the products of the soil, they put out a railway to tempt the products. He believed it was arranged that all the cotton grown by the association in Northern Nigeria should not be sold to any other country, but should be sold in England alone, Manchester chiefly. If that was the case it was the most extreme form of protection followed by Germany. No one, however, thought that this railway was going to give Manchester within any limited period the cotton which she required for her industry. He did not believe the under-secretary has supported the railway for that purpose; a much larger consideration had affected him, stragetical reasons, the policy of developing a new country, and all the natural products of the country. For that policy he agreed. He supported the bill warmly. It was a good tariff reform bill, embodying a good protectionist policy, which he was glad to have the right honorable gentleman so strongly putting forward.

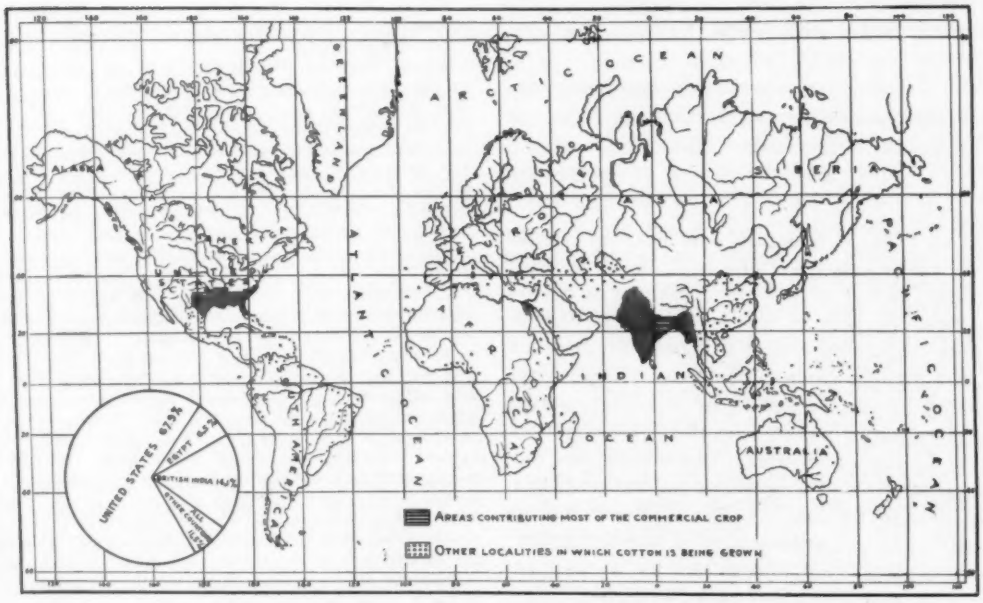
Mr. Churchill: He hoped that in dealing with this matter of the administration and scientific development of a great territory they would not think it necessary to plunge into the controversy between free trade and protection.

It is a fair inference from the colonial under secretary's neglect to reply to Sir G. Parker's inquiry that some plan has been adopted to confine the product of British cotton fields to British mills. While the question in itself is of no material importance because of the small supply of British colonial cotton, a very important principle is involved. At present the world has free trade in cotton. We do not recall any country that places restrictions on the sale of cotton. In the United States export duties are prohibited by the constitution. Is the first attempt to restrict free trade in cotton to be made by a free trade government in free trade England?

According to British statistics the foreign trade of the United Kingdom, Germany, France, and the United States per capita for the year 1906 was $100.15, $55.44, $50.76, and $36.96, respectively.

The Coming Cotton Conference.

The true rules of conduct are those based not on an ideal, but what on was, is, and can be.—Joh. von Mueller.



THE SCOPE OF THE COMING CONFERENCE.

The coming month will witness a notable conference at Atlanta, Ga., on the state of the cotton trade. It would be idle to dispute as to which of the three essentials to the existence of civilized man, food, shelter and clothing, is the most important, but of all the materials that supply clothing there is none to dispute with cotton for the chief position. It is, therefore, no exaggeration to state that the progress of mankind involves a corresponding development in the supply of cotton. Stop the increase in the cotton crop and civilization halts because nature offers no substitute. Whether the conference next month at Atlanta meets our expectations and hopes or not, one thing is beyond dispute, the great importance of the questions to be considered on that occasion. More than a hundred of the leading cotton spinners and manufacturers of Europe will be present. An equal, if not greater, number of American manufacturers will attend, while the cotton planters, among whom the meeting is to be held, will be represented by thousands.

No feature of the conference will give Americans greater personal satisfaction than the opportunity to meet the visitors from foreign lands. It is on the whole fortunate that extending the hospitality of the country to them is to be so largely the duty of the South, for it is there that the nearest approach can be made to the welcome to the American representatives at the cotton congresses of Manchester, Bremen and Vienna.

PLAIN WORDS ARE BEST.

Pleasant and useful as will be the social side of their visit among us, it is not by hosts and guests that the most important work of the

conference is to be done. It is only by discarding these roles and acting in their capacity of independent and equal representatives of a great industry that the members can expect to attain any permanent success from the conference. The cotton industry is suffering from serious evils, the result of the lack of acquaintance and co-operation in the past. For their remedy, plain words and earnest work are needed. For this reason no conventional restraints should prevent those who take part in the Atlanta conference from stating boldly and without reserve their opinions of the various questions under consideration. That is the first duty of each one, regardless of what branch of the trade or what country he may represent.

THE BASIS OF THE COTTON INDUSTRY.

It would also expedite the work of the conference if each member should keep in mind the everlasting truth that the cotton industry exists because of the needs and purchasing power of the consumer. In buying the finished product the consumer pays for the labor of the planter, spinner, manufacturer and all who have helped to place the product in its finished form within his reach. Cotton, both in its raw state and in process of manufacture, is of value to the possessor only because it can be sold. He cannot eat it or wear it. Under a proper adjustment of the cotton trade, all who have shared in the manufacture, transportation and exchange of the finished product share equitably in the distribution of the retail price. An unfair division may continue for a time. The planter may get less or more than his share. The spinner's or weaver's profits may be above or below what is fair. The charges for transportation may be too high or too low. The merchant who deals in raw stock, materials in process or finished goods, may retain less or more than a fair profit. Sooner or later, however, such inequalities will be corrected, either by resistance from those who are getting less, or by an increase in the number of those who are getting more than they should. However it may be divided, it is the price paid by the consumer that supports the cotton trade. In the final analysis the industry depends, not on cotton growers, spinners, weavers or traders, but on the consumer, who in all probability will have no accredited representative at Atlanta.

THE COTTON SUPPLY.

The first topic listed for discussion, Advantages of the South for Cotton, need not occupy much of the time of the conference. These advantages are self-evident. What needs examination is the disadvantages, if any exist. The chief among these, perhaps the only one that is worth mentioning here, is a shortage of labor for developing the latent resources of the country. A remedy for that deficiency may be easy, but none should be recommended without the most careful deliberation. The visitors to this conference will see on every hand the shadow that rests over the otherwise sunny South. Better that not another bale of cotton shall be grown in the American cotton belt than that another race issue of any hue shall be loaded on this country. Austrian, Belgian, Briton, Dutch, French, German, Hungarian, Italian, Portuguese, Russian, Spanish, Swiss, all these that our visitors represent, and more, will be welcomed to the South, because they each possess the necessary requirement—the capacity to amalgamate with the white race and become Americans. White immigrants offer the only immediate solution of the labor difficulty as a means of increasing the American cotton crop. Any other is impossible because it conflicts with the overwhelming sentiment of the American people.

PLANTER AND SPINNER.

Closer trade relations between growers and spinners comes next on the program. Simplifying the system of marketing cotton by eliminating unnecessary middlemen is as certain to benefit the cotton trade as the adoption of labor-saving machinery in the mill. It is idle, however, to think of eliminating the middleman entirely and bringing the growers of the South and the spinners in all parts of the world into direct relations. The problem is to reduce the marketing organization to the simplest and most economical form. That in all probability means an improved system of dealing on exchanges and in cotton futures. The world is

too large, the manufacture, sale and transportation of cotton goods are too complicated, and take too much time, and the value of the cotton crop is too great for the trade to dispense with trading in cotton futures. Reforming instead of abolishing the exchanges should be the object of the Conference.

BALING AMERICAN COTTON.

The highest hopes for immediate benefits from the Conference are that it will lead to an improvement in the present wasteful methods of baling and handling cotton. There should be placed side by side on exhibition at the Conference sample bales of Egyptian, Indian, Nigerian and American cotton. This exhibit should be accompanied by a clear statement of the gain that would result from baling the American crop properly, as the Egyptian, Indian and Nigerian crops are baled. It should be made plain to the planter that he is the greatest sufferer from the present wasteful methods. The remedy for bad baling will be reached by bringing the truth home to the Southern planter. Then we are likely to see something doing in the way of reform.

STABILITY OF PRICES.

One of the questions to be brought before the Conference is Stability of Price. Whether of raw material, yarn or finished goods is not stated. Presumably reference is made to raw cotton, which has been subject to such wide and sudden fluctuations. Absolute stability in the price of a commodity is impossible. It is not even desirable. Price is the measure of the balance between supply and demand, of the relation between the wants of the consumer and the power of the producer to supply them. By the natural fluctuation of prices the compensation to each branch of the trade is automatically adjusted to changing conditions. Fluctuations of prices may be unnatural, not justified by conditions, the result of manipulation. It is such fluctuations that the Conference should try to abolish. To this question is linked that of speculation, which is also listed for discussion. The two form a problem that should lead the Conference to seek not absolute stability of prices, but rather a reform of abuses.

STATISTICS.

This subject which is to come before the Conference, and to which is allied the question of government crop reports, recalls the words of an Englishman some years ago when proposing a toast to the Manchester Statistical Society: "I have the greatest difficulty in proposing this or any other statistical society, because I hate statistics and believe all honest people do. Somewhere, I speak with some reserve, but think it is in Chronicles, we find this passage: 'And Satan stood up against Israel, and provoked David to number Israel.' It is noticeable that Satan started it. And when all was finished David said: 'I have done foolishly,' and I have no doubt that he had."

All this goes to show that statistics are very much alike on both sides of the Atlantic. Reliable statistics, however, are indispensable in the cotton trade. The trouble at present is that the trade has so many that are unreliable. Not the least of the opportunities awaiting the Conference is to point out needed reforms in this department. What the cotton trade needs in the line of statistics is a reduction of the quantity and an improvement of the quality.

A PERMANENT ORGANIZATION OF THE CONFERENCE.

The Conference at Atlanta, like the one at Washington last year, although called together by the various cotton associations of the country, owes its existence to the sentiment of the cotton trade in Europe as well as in the United States. The need of a better acquaintance and understanding, and more effective co-operation has long been felt by cotton growers, spinners and manufacturers everywhere. Because of this sentiment the suggestion of a friendly international conference when made by the editor of this journal at Atlantic City two years ago met with a prompt and unqualified approval from all quarters. The Washington Conference, although called together hastily in response to that suggestion and lacking many of the elements necessary for the success of such a gathering, demonstrated so plainly the great possibilities for good in regular confer-

ences of planters, spinners and manufacturers, that the Conference at Atlanta was arranged on a larger scale.

At Atlanta the benefit of these gatherings will be even more evident than at Washington, and should lead to the formation of a permanent organization. That organization should be broad and liberal as befits an industry of such world-wide importance. It should be business-like and efficient to meet the many difficult problems that press for solution. No local prejudice, no narrow national sentiment, should impair its usefulness. The need is for an organization that permits individual freedom of action to each branch of the industry and to each country, and yet makes it possible for all to cooperate in every undertaking that is for the common good. There are many issues on which sharp differences of opinion and divergence of interests will develop between different countries and different sections of the trade. The millennium is not here. The inexorable law of trade leads the seller to struggle for the highest price, the buyer to seek the lowest. Moreover the division of the world on political lines and the irregular distribution of population create special national interests. These individual and sectional interests must be respected in moulding the cotton conference into a permanently successful institution. This in fact is the most important task to be undertaken at Atlanta, and requires ability of the highest order. It is especially fortunate that so many representatives of the European cotton trade are to be present to participate in this work, for it is in that trade during the last century that organization has been most highly developed and its advantages most clearly demonstrated. Not only because of their experience, but chiefly because they represent so important a part of the cotton industry, the European delegates should join the planters and the American spinners and manufacturers in giving to the world's cotton trade a permanent International Conference, where the representatives of all interests whether identified with capital or labor may meet and reason together.

In 1905 Cuba sent to the United States 86.53 per cent. of its total exports.

THE AUSTRALIAN WOOL CLIP.

BY R. J. WITHERS.

The favorable seasons that Australia has recently enjoyed have led to such a spread of the rabbit pest that the question of dealing with it is the greatest problem wool growers have ever had to face. During the great drought when our flocks were decimated the rabbits also received a check, but with the return to bounteous seasons they have multiplied in a manner that is little short of marvelous despite an enormous expenditure in wire netting around huge properties and in poisoning and trapping operations.

The effect of the pest on the carrying capacity of the country is very marked. It is estimated that but for the rabbits New South Wales runs would carry at the very least 10,000,000 more sheep and that the annual loss in one state alone is upwards of £3,000,000. During the present season it has been made very clear that the effects of dry weather are felt much more rapidly than in former years despite the amount of money that has been expended in the conservation of water. In the old days a good fall of rain was followed by an abundance of grass and a good season was assured. Now when the grass springs up the rabbits appear in myriads, and before many weeks have passed every vestige of herbage disappears before the inroads of the pest. The rabbits have been a thorn in the pastoralist's side for many years, but never before were they such a curse as they are at present. They have now spread to districts once happily immune and land which could at one time be regarded as safe for six months after a generous rainfall is now denuded in as many weeks.

Another very important point is that wool from sheep in rabbit infested country is frequently unsound and badly grown and the yield per head is considerably reduced. It must not be imagined that our wool growers have stood idly by and let the rabbits spread. They have incurred an enormous expenditure in wire netting and the cost of poisoning, fumigating and trapping is now a

very serious item in the management expenses of large properties. Despite all that can be done, however, the pest becomes more serious every year and it is plain that present methods are altogether inadequate in coping with the ubiquitous rabbit.

It is curious to reflect that the rabbits, which are such an acknowledged pest now, were introduced years ago by the very class that is up in arms against them today. The cradle of the pest is popularly attributed to the province of New Zealand. There we are told by the authorities of these days that in the early sixties some half dozen pairs of rabbits were turned loose on the sandhills a short distance from Invercargill, but they were of the tame variety and did not thrive. An enthusiastic Scotchman got some friends to send him out a dozen pairs of wild rabbits from his native Caledonian hills. These were liberated at a specially arranged picnic and their release was celebrated by toasts and speechifyings and the importer was lauded as a public benefactor. It was further enacted that to kill or injure them was a grievous offence punishable by heavy fine and imprisonment. In Australia rabbits were first introduced by a squatter near Melbourne who thought they would help to remind him of home. It has been estimated that a single pair of rabbits under conditions favorable to them will multiply to the enormous number of 20 millions in a space of five years and it will readily be seen that the work of keeping in check a pest which increases at such a rate is a task of no mean order.

Dr. Danysz of the Pasteur Institute, Paris, has for many months past been conducting experiments with a virus with which he hopes to be able to settle bunny once and for all. The scientist has been specially brought out at the expense of pastoralists and capitalists, who subscribed to a fund that is being drawn upon to pay all expenses. Laboratory experiments were first made and subsequently the scene of operations was removed to Broughton Island, a small island off the coast of New South Wales, where the object was to prove that the virus was not dangerous to any other form of animal life. These experiments have been fairly successful up to the present, but they are to be continued until October next when they will have extended over a year and information will then be available as to the effect of the virus at all seasons of the year.

Meanwhile Dr. Danysz has returned to France, but will come out again at the end of October if the Government grants him permission to extend his experiments to the mainland. Before leaving he presented a lengthy report in which experiments were described in detail and it was shown that the deadly nature of the virus on rabbits was all that has been claimed for it. At the same time the conditions of climate on the island are against the natural increase of rabbits and it is recognized that the tests cannot be finally satisfactory until the rabbit is dealt with on the mainland and in the country where its ravages are most felt. As to the harmlessness of the virus on the different forms of animal life, the fact that sheep which were twice heavily inoculated suffered no ill effects and were afterwards killed and eaten is fairly convincing. Dr. Danysz has left one of his staff in charge and Dr. Tidswell of Sydney remains on the island to report finally to the Government.

Wool growers strongly urge that every opportunity should be given to the scientist to experiment on the mainland, but there is strong opposition on the part of those interested in the rabbit export trade. They contend that rabbit trapping is giving profitable employment to large numbers of people and that the "industry" is worth cultivating. It is well known that large numbers of erstwhile shearers are now making good money as trappers and the labor party strongly opposes the introduction of a disease that would put an end to the business. Taking the state of New South Wales, however, the value of the rabbit export trade is put down at about £500,000 whereas as previously stated the loss in wool production is three millions sterling per annum, and the value of the wool clip is over £12,000,000.

Despite these facts great pressure is being brought to bear on the Government to disallow tests on the mainland and it is not at all certain that the doctor will be allowed to

go on. Pastoralists live in hopes that permission will eventually be granted and the committee who are managing the fund subscribed have great hopes that the test will ultimately be allowed and that they will be successful, in which case the prosperity of the state will be increased in a very marked degree and our wool production will materially expand. Meantime no effort is being relaxed to keep the pest in check with poisoning, trapping, fumigating and wire netting until some more effective means of coping with the evil are secured.

THE DOMESTIC WOOL CLIP.

Fort McKavett, Tex., Aug. 15, 1907.

Editor Textile World Record:

Has it ever occurred to you that the reason why the United States is unable to compete with other countries in raising wool is the presence of wild animals that depredate on our sheep, compelling the outlay of a large expense in hiring shepherds to watch them? I think I am within bounds when I say it costs between 9 and 10 cents a pound on the wool produced to cover this expense, which our competing countries are relieved of to a great extent.

Would it not be wise for Congress to take some action to remove the cause and place our country on a more favorable footing? It is true the states have made an effort to exterminate these pests, but as a rule, the appropriations have not been large enough to do the work effectually.

I believe if Congress would establish a bureau for the purpose of destroying wild animals it would be but a few years when most of the cattle ranches would run sheep inside their enclosures and in a comparatively short time we would have a surplus of wool to export.

One of the greatest drawbacks to a proper development of the sheep industry in the past has been the necessity of hiring shepherds. We used to have no trouble in Texas twenty-five years ago in finding such labor, but as the country developed it seems that other industries were more inviting and it is now almost impossible to hire men for such service except at very high wages. If the wild animals were removed there would be no need of shepherds and I am sure the entire outlay on the part of Congress would be restored tenfold to our people in a cheaper wool.

Wm. L. Black.

THE TEXTILE SCHOOL IN NORTH ADAMS.

BY ARTHUR D. DEAN.

Educational training in order to be effective must be in close touch with the industrial workers. It must meet the actual needs of these men and must deliver the goods right at the door of the worker. Thirty-four per cent. of the textile workers of Massachusetts live in cities in which are located state textile schools. This leaves sixty-six per cent. of our textile workers living in cities where no public textile instruction is provided. There are over 75,000 young men engaged in textile industries in this state. Of this number 1500 attend the evening textile schools. These facts show the need of providing evening textile instruction in the various textile centers of the state.

A few years ago the North Adams branch of the Y. M. C. A. organized classes in textile design and mill calculations. The work was a success from the start. The number of students and the efficiency of the work has increased and the coming fall their evening work will assume a position which guarantees permanency. From now on the young men of North Adams can be assured that if they take the elementary textile work for a year there is another course for them to step into after the completion of their first year's work. The employers of North Adams are interested enough in what they are doing in supplementary education to serve on the board of management of the school and are making generous contributions toward its equipment and support.

The entire top floor of the Association building will be used for the textile school. A large class room will be fitted up with tables for thirty students. The two other class rooms will be equipped with four dobby hand looms, two jacquard looms, one card

cutter, warping and beaming machinery, etc.

It is planned to have courses in mill arithmetic, designing, and weave construction of cotton and woolen cloths. The designing class will take up simple cloths in a practical way and produce the design on the hand looms, doing all the work of warp making, beaming, drawing in and weaving. The class in advanced textile design will take up double cloths, jacquard, leno and lappet work.

Several of the mills have offered voluntarily to help in providing the necessary materials needed, to finish the cloth woven at the school and to show the practical workings of the different departments of their mills to the students.

A significant fact is that the plans of the North Adams school have been approved and carried out by the busy agents of the various textile mills. They have spent much time in deciding on the courses, teachers, tuition and other details. That they are willing to give their time to purchasing machinery, selecting materials and outlining courses, shows not merely an interest in textile education, but a broader interest in the textile workers. They recognize that the three textile schools of the State with a total enrollment of 167 day students and 1419 evening school students provide no special training for thousands of young workers who need textile instruction.

The advisory committee of the North Adams school consists of Harvey Burnham of the Beaver and Eclipse Mills, chairman; John Adams of Adams Brothers Company of Adams; George Crosier of the Greylock Mills; W. K. Greer of the Eclipse and Beaver Mills; J. D. Griffith of the Blackinton Mill; Swift Laurie of the North Adams Manufacturing Company; C. T. Plunkett of the Berkshire Mills of Adams; J. N. Sanderson of the Renfrew Manufacturing Company; John Waterhouse of Waterhouse & Howard.

The value of the exports from Austria to the United States in 1906 were $15,155,757, a gain of more than two million dollars over that of 1905.

SILK LUSTER ON COTTON FABRICS.

BY PROF. HUGO FISCHER.

(From Zeitschrift fuer Textil-Industrie.)

In addition to the process of mercerizing, which is both chemical and mechanical, there has been introduced in recent years for the purpose of imparting a silk like luster to cotton goods a process that is wholly mechanical. The luster imparted by this mechanical process is fugitive and disappears when the goods are wet. There are many cheap goods, however, for which it is suitable. It can also be used to advantage in connection with the mercerizing process. This process of lustering originated in the invention patented by John Appleby, of Manchester, England, in 1860. He employed a friction calender with narrow rounded corrugations running around the cylinder or lengthways parallel with the axis. In this way each thread either in the warp or filling was glazed. Twenty-five years later an important improvement in the process was made by George W. C. Kirkham, England. He used a cylinder having the surface filled with fine grooves, from 45 to 46 to the inch, and shaped so as to produce a luster by the reflection of the light on the cloth. This was the real beginning of the present process. Kirkham followed Appleby's example and had the grooves in the cylinder run either around the roller or lengthways parallel to the axis. He also had them running in two directions on the same roller, producing fine points. In a later patent he adopted grooves running diagonally and also modified the profile so that the top of the projections between the grooves were flat instead of coming to a point. Kirkham's process, however, failed to give a uniform silk luster because of the large size of the corrugations.

The development of the process so as to impart a high luster to goods made of other material than silk was due to Dr. Schreiner of Barmen-Rittershausen, Germany, whose first patent for this purpose was issued in 1894. Dr. Schreiner pointed out for the first time that a high and uniform luster depended on the formation of numerous small surfaces lying at various angles to one another on the

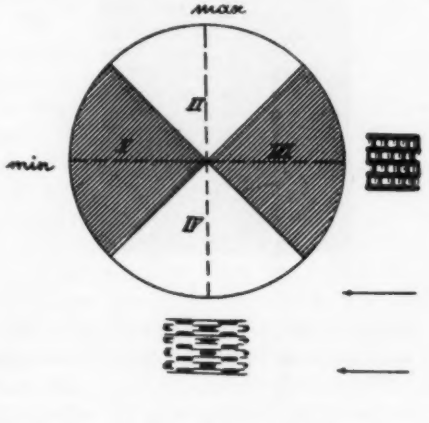
face of the cloth. The failure to state the claims accurately and the lack of drawings in the patent specifications were the cause for the many contests as to its validity. It was because of the defective claim regarding the form of the working surfaces of the roller that the validity of the later Deissler patent was upheld. As will be shown by the tests to be described later the size limits given in this patent, namely, 12 to 50 per inch, give the silk luster desired by the textile trade. At present this patent is owned by the J. P. Bemberg Cotton Mfg. Co., Barmen-Rittershausen.

The process was further developed by changing the form and size of the reflecting surfaces. An important step in this direction was taken by Joseph Eck & Sons, Dusseldorf, who obtained a patent for the use of irregularly sloping grooves, points being formed by running the grooves in opposite directions. In the latter case the reflecting surfaces are formed from pyramidal or roof-like projections or depressions that impart a granulated surface to the cloth. This surface was designated as net or diamond engraving to distinguish it from the straight or diagonal corrugations. As in the original Schreiner process, the luster depends on the dimensions of the reflecting surfaces.

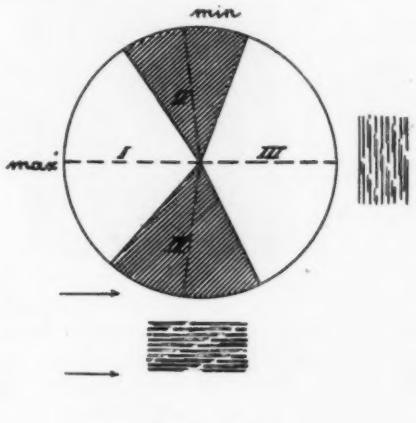
In 1904 W. J. Pope and Julius Hubner, of Manchester, England, patented a lustering roller in Germany which was described as having a surface provided with separate groups of corrugations running parallel or spirally, and invisible to the naked eye. Recently another patent has been obtained by A. Keller-Dorian, engravers at Mulhouse, by which flat projecting surfaces running in undulating lines are produced on the surface of the rollers.

The tests about to be described were made personally by me on goods found in the open market. I am specially indebted to a number of German firms for valuable assistance in this work. The yarn used in the manufacture of silk goods, especially of the better grades, exhibits under the microscope fine lustrous lines having high reflecting power. These lines produce the well-known high luster of silk goods. The fact that this luster is influenced by the weave and finish suggests a parallel. Thus we have a dull luster on taffeta and a high luster on the satin weave. The intensity of the silk luster varies from the high luster of the satin weave to the dull luster of raw silk. The luster of silk depends on numerous conditions, and makes it difficult to give any general definition of the cause. In the absence of an exact definition we must depend on personal observations of conditions. This results in the practice of defining silk luster by the commercial names of the different fabrics. As a general term silk luster indicates a high luster such as that obtained with the best grades of silk woven with the satin weave.

The luster of silk as well as of mercerized



SILK TAFFETA. FIG. 1.



SILK SATEEN. FIG. 2.

fabrics is caused by the reflection of the light in one direction instead of being diffused in all directions. It follows that the luster is visible only in certain positions in which the light is reflected to the eye. An illustration of this is found in the satin weave, which exhibits varying degrees of luster in different directions, differing from the uniform luster of a mirror. This variation is illustrated by Figs. 1 and 2, which show the appearance of a fabric under a microscope magnifying four times and with the light coming from the left. By slowly turning the fabric around, changing the relative position of the filling and warp to the light, the change in the reflection is observed. The position of the fabric at the time of greatest and least reflection to light were noted. The white portions of the circle indicate luster; the shaded parts, the absence of it. While Fig. 1 shows that light and darkness balance each other during the revolution of the sample so that each corresponds to 50 per cent. of the circle, Fig. 2 shows the light and darkness in the proportion of 2 to 1. A comparison of the two ratios shows the difference between the luster of the two fabrics.

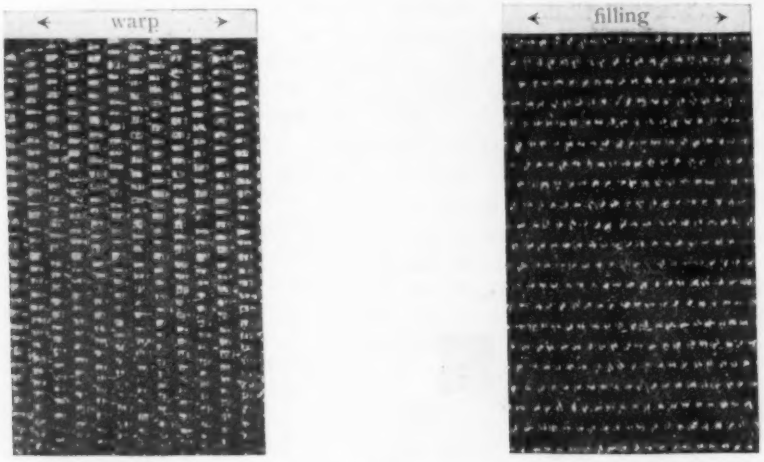


FIG. 1A.

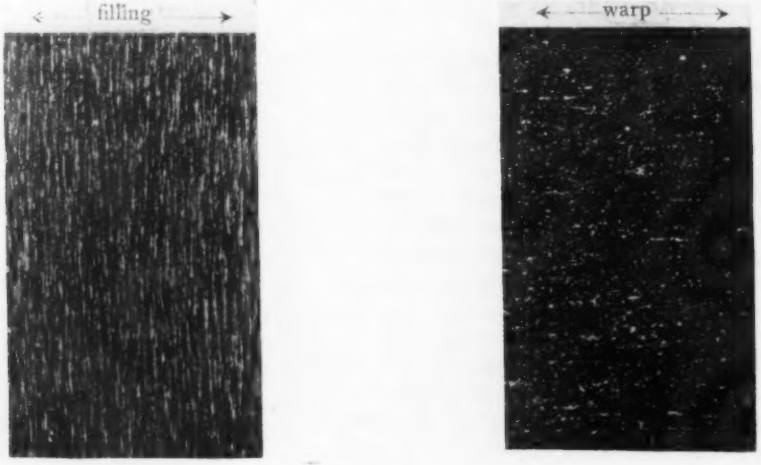


FIG. 2A.

The cause of this is explained by the an-

nexed figures at Figs. 1 and 2 as well as by Figs. 1a and 2a; the latter showing the two fabrics as seen under the microscope enlarged 30 times with the light from the left. The positions shown at Figs. 1a and 2a correspond with the maximum and minimum as shown in Figs. 1 and 2. Black cloth was used

FIG. 3. FIG. 4. FIG. 5.

for the tests in order to remove the influence of color.

The fact that fabrics made from other materials than silk do not show the same luster when woven in the same way is due to the difference in the fiber. The luster arises from the homogeneousness of the mass of the fibers, the smoothness of the surface, as well as the small diameter of the fiber, conditions which are supplied in a high degree by silk and which are largely lacking in the raw cotton fiber. They are found, however, in certain grades of linen and in mohair.

The process of imparting silk luster mechanically to cotton fabrics consists in pressing the goods so that instead of the irregularity resulting from the natural position of the cotton threads in the weave a regular arrangement of reflecting surfaces is ob-

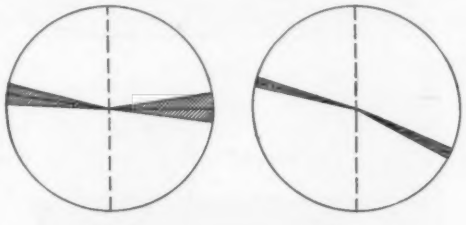


FIG. 6. FIG. 7.

tained, from which the light is reflected to produce the silk luster desired. Figs. 3, 4 and 5 show three forms of corrugations to produce this result. The parallel grooves reflect the light at right angles to the direction of the grooves so that the cloth appears dark when observed in a direction parallel to them. Thus with the surfaces inclined at an angle of 45° as shown at Fig. 3, the light is reflected in two directions. If, however, the angle of the reflecting surfaces is varied giving an inclination of 37° and 54°, as shown at Fig. 5, a varying degree of luster is observed from different directions. If two series of grooves intersect each other the number of directions in which the light is reflected is increased to four, giving the cloth a luster when observed from four positions. It is important, however, that the angle at which the grooves intersect each other be above a certain limit, otherwise the rays of reflected light will become mixed, destroying the luster. The size, number and relative positions of the reflecting surfaces

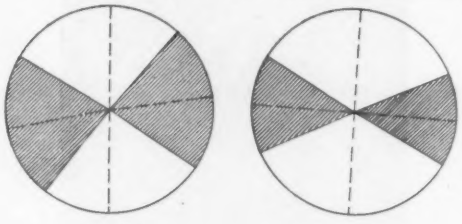


FIG. 8. FIG. 9.

have an important influence on the luster. The number varies from 50 to 500 per inch. The diagrams shown at Figs. 6 to 9 are formed in the same manner as those shown in Figs. 1 and 2, but indicate the effect of change in the direction of the grooves in four samples of cotton goods. The results of the tests are shown in the following table in which L indicates luster, and D its absence:

Fig.	Kind of Cloth	Angle of Grooves to Filling	Grooves per inch	L. D.
6	Silkette Calendered	90°	125	92: 8
7	Cotton Cloth	40°	125	97:3
8	Silk Cotton Satin	21°	275	70:30
9	Cotton Cloth	16°	500	55:45

The appearance of Figs. 6 and 7 is practically the same as that of a perfectly flat surface. That the goods do not under ordinary conditions exhibit this appearance is due to the effect of the weave and twist of the yarn on the wide grooves, causing at intervals a complete disappearance of the reflecting surfaces. This produces an effect similar to the moire finish. The highest luster is obtained on cotton cloth with 200 to 300 grooves per inch, giving the effect under the microscope illustrated at Fig. 8, with a ratio of 7 to 30 as compared with 2 to 1 in Fig. 2.

An increase as well as a decrease in the fineness of the grooves results in a loss of luster. Coarse corrugations, say 50 to 75 per inch, always cause an irregular distribu-

tion of the luster and produce an effect similar to that of watered silk, as shown in

FIG. 11.

Fig. 10, which is a photograph of a black cotton fabric finished by the Kirkham proc-

FIG. 10.

ess with a No. 50 surface, that is with 50 grooves per inch. The stripes running at an angle of 40° to the grooves and about 20° to the filling are quite distinct. With a 100 to 125 surface the grooves running at an angle

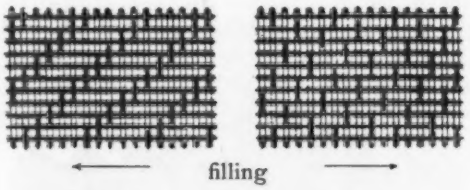


FIG. 12. FIG. 13.

of 27° to the filling line are easily distinguished along with a certain watered effect as shown at Fig. 11. The watered effect at

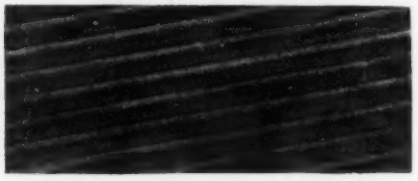


FIG. 14.

Fig. 11 is seen next to the edge of the cloth. This is caused by the angle at which the sample was photographed; as a matter of fact

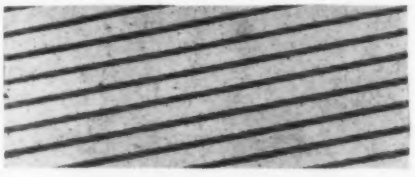


FIG. 15.

this appearance is distributed over the entire surface of the piece. A finely engraved cylinder gives a mirrored effect similar to that

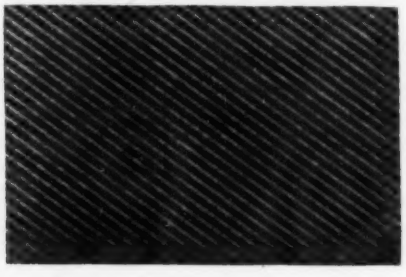


FIG. 16.

produced by pressing with a plain surface. Thus by pressing a fabric having 75 threads

per inch each way with a No. 500 surface each thread has about 7 grooves. Fig. 9 illustrates the degree of luster obtained under these conditions, the ratio being 55 light to 45 dark.

FIG. 17.

The degree of luster depends on the pressure and temperature and the weave of the cloth. The plain weave gives the least luster owing to the large number of intersec-

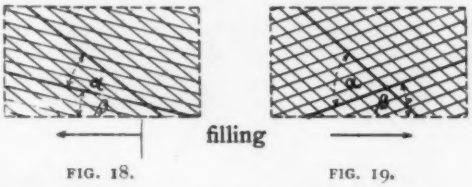


FIG. 18. FIG. 19.

tions of the threads. The best results are obtained with 4- or 5-leaf filling twills with about 75 threads per inch each way, or with a 5-leaf satin weave having 75 to 95 warp threads and 60 to 145 filling threads per inch, as illustrated at Figs. 12 and 13 respectively. The inclination of the grooves to the filling line is also an important factor in producing the luster; generally the angle is very small as shown at Figs. 14 and 15, which are enlarged 75 times. Figs. 14 and 15 also show the effect of uniform and varied slopes of the

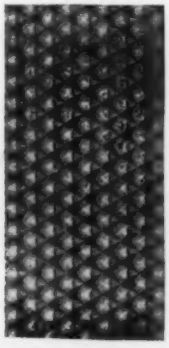


FIG. 24.

reflecting surfaces under the same conditions of light.

The effect of different sizes of grooves is illustrated at Figs. 16 and 17, which show the finish produced by No. 100 and No. 250 cylinders with irregularly sloping surfaces, the illustration being enlarged five times. The inclination of the grooves to the filling line in the goods ordinarily found in the market varies from 8° to 20°; greater angles are seldom found.

Double grooving is shown at Figs. 18 and 19, the former consisting of lines running in the same general direction, while the latter shows the lines running in opposite directions. At Fig. 18 the two lines intersect

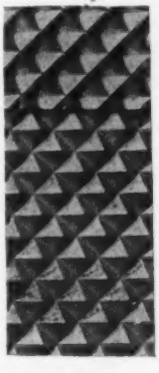


FIG. 20.

FIG. 21.

FIG. 22.

FIG. 23.

each other at an angle of 15° to 40°, the angle with the filling line varying from 4° to 12°. At Fig. 19 the two grooves intersect each other at angles varying from 58° to 60°, ing the density of the grooves, the angles of intersection and the slope of the reflecting surfaces. Joseph Eck & Sons, of Dusseldorf, supply 16 different styles of rollers.

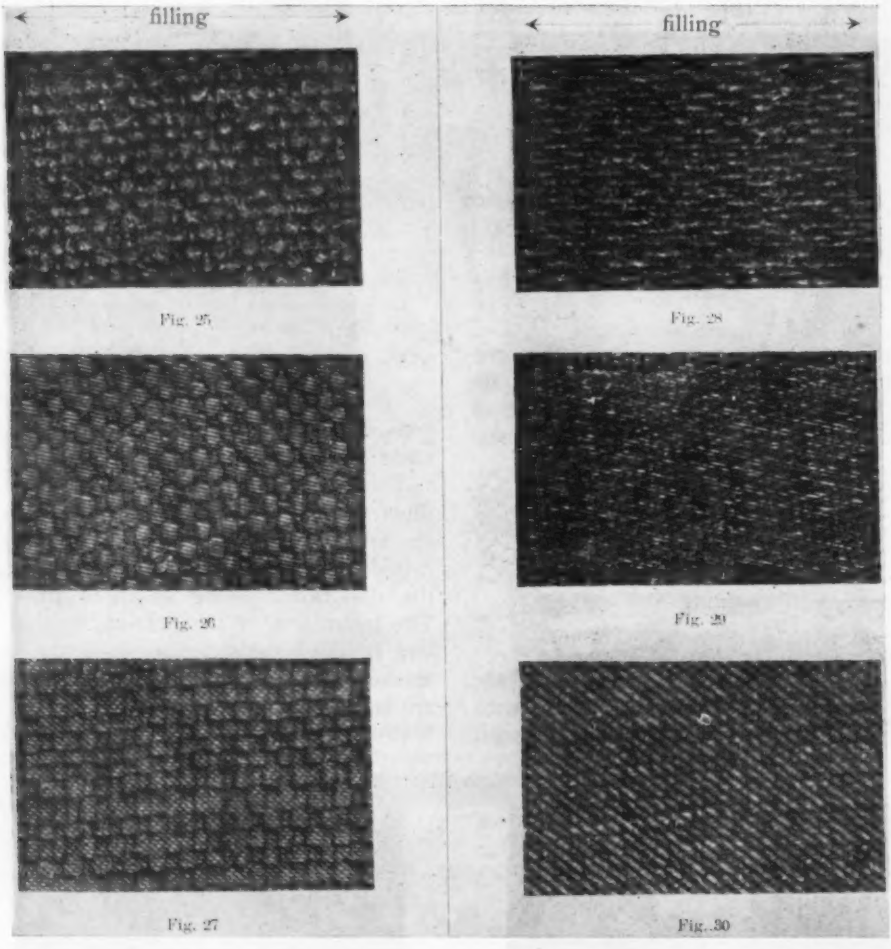


Fig. 25 Fig. 28

Fig. 26 Fig. 29

Fig. 27 Fig. 30

while the angle with the filling line varies from 15° to 20°. In one case both angles were 45°. The intersection of two sets of grooves results in the formation of small pyramidal projections with rhomboidal surfaces running in rows as shown in Figs. 20 to 23. With all the surfaces of the same angle the points or ridges of the projections come in the center, whereas when the surfaces slope at different angles the points or ridges are located to one side or the other.

Varied effects can be produced by changAdditional combinations can be obtained by varying the size of the grooves. In practice, however, only a few styles are used as the difference in the luster produced by further variations does not compensate for the expense.

Fig. 24 shows a roller with the grooves running in three directions. The grooves in the finished goods present a much more irregular appearance under the microscope than do the metal surfaces. This is due to the irregularity of the yarn and the effect of

the weave. Figs. 25 and 27 show microscopic views of fabrics enlarged five to six times. The cloth was mercerized and colored black before being treated with the

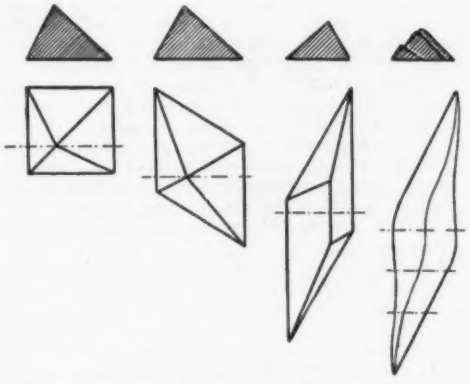


FIG. 31. FIG. 32. FIG. 33. FIG. 34.

Schreiner finish. Fig. 25 is the cloth before pressing; the sample shown at Fig. 26 was pressed with a No. 250 diagonal cylinder with irregularly sloping surfaces. Fig. 27 shows the sample finished with a cylinder

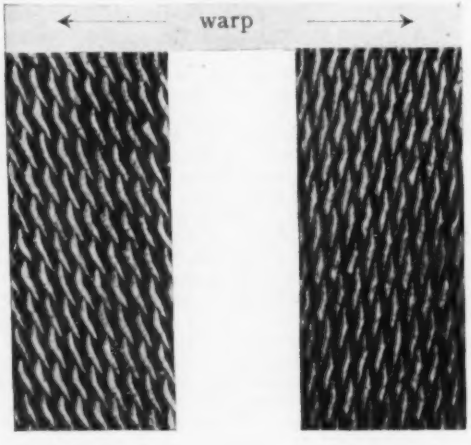


FIG. 35. FIG. 36.

having irregular surfaces, 250 grooves per inch in one direction and 200 in the other. Figs. 28 and 29 show a mercerized black cotton zanella before and after finishing with a No. 225 diagonal cylinder. Figs. 26 and 30 show a cotton fabric finished with a No. 250 and No. 100 diagonal cylinder, respectively, the difference in appearance being due to the difference in the size of the grooves. Figs. 31 to 33 show different surfaces obtained by varying the angle of intersection of the grooves. Fig. 34 shows a surface having three different projections, proposed by Keller-Dorian. Figs. 31 to 34 show cross sections of surfaces, enlarged 100 times. Below each section is a plan of the projection. Figs. 35 and 36 show the surfaces of the cylinder corresponding to Fig. 34 as seen under the microscope enlarged 18 times. The grooves intersect each other at an angle of 90° and intersect the filling at an angle of 4° to 5°. There are 225 grooves per inch.

A REASONABLE REQUEST.

Abuses in the cotton trade are so numerous and flagrant that the exposure of one, even though it is a very bad one, attracts but little attention. Most anything in the way of slipshod methods may be expected from a trade that allows its products to be baled and shipped as is American cotton today. It is because cotton trade abuses have become commonplace that so little attention has been paid to the complaint about bills of lading at a recent conference of cotton spinners, merchants, shipowners, underwriters and bankers at Liverpool. At present the bills of lading are forwarded to Europe and payment demanded for cotton that may still be lying at some point in the interior of Texas. The European trade unite in demanding a reform by which a bill of lading accompanying a draft shall represent cotton on its way to Europe and not rotting in the streets of some Southern town. Various suggestions for remedying the difficulty were considered at the Liverpool conference, the discussion and resolutions being reported in the "Cotton Gazette" as follows:

At the recent conference in Liverpool on cotton bills of lading, the proceedings were opened by the President of the Liverpool Cotton Association (Mr. John H. Clayton).

Mr. H. Kern was elected to the chair, and in his opening statement gave a short definition of the various Bills of Lading, viz:—

1. A Railway or Local Bill of Lading for shipments from the Interior to the Port.

2. A Ship's or Port Bill of Lading for shipments from the Port to Europe.

3. A Through Bill of Lading (or a combination of the two preceding ones) for shipments from the Interior via a port to Europe.

All these three kinds of Bills of Lading were issued at the time and place of the actual delivery of the goods to the carrier.

In addition to these, a new kind of Bill of Lading had been created, which looked like a Port Bill of Lading, but could not be properly called such, because it was issued at a port before the cotton had actually arrived at that port. This Bill of Lading was known in Texas as

4. An Ocean Bill of Lading; and it was this document which had given rise to strong objections, contained in certain circular letters of the Liverpool Cotton Association. The justice of the objections appeared to be pretty generally admitted. Even interested parties in Texas seemed to consider a reform necessary, because they had drawn up a new Bill of Lading, which was termed

5. An Exchange Bill of Lading, which had the advantage that it plainly stated that it was only a receipt given by a ship's agent for Railway Bills of Lading which had been delivered to him, and not a receipt for actual cotton.

This Bill of Lading reads as follows:—

EXCHANGE BILL OF LADING.

Received from ..... Railway Bills of Lading for ..... bales cotton in apparent good order and condition, in exchange for which documents this Bill of Lading is issued upon the following terms and conditions:—

Upon receipt of the above-mentioned cotton the steamship agent signing this Bill of Lading undertakes to forward said cotton on board the steamship ..... or, failing shipment by said steamer, on board another steamer or steamers, etc., etc.

Master's or agent's receipts of the steamer carrying the goods shall be issued to the shipper after the goods are loaded on board, said receipts being subject to the terms and conditions of this Bill of Lading.

In the event of failure on the part of the railroad company to deliver the above-named goods, or any part thereof, in accordance with their Bills of Lading, the steamship agent will transfer his right in said railroad Bills of Lading to the legal holder of this Exchange Bill of Lading, upon surrender of the same at Galveston, etc., etc.

The Chairman stated that he intended to commence with the Ocean Bill of Lading as being the least contentious subject, and called upon Mr. D. Cunningham to move the resolution of which he had given notice.

Mr. D. Cunningham explained that the Ocean Bill of Lading in reality was only a receipt given in exchange for various local Bills of Lading, that in itself it was not binding on either land or ocean carrier. That the obligation of the land carriers terminated with the delivery of the goods to the agent at Galveston, while the legal responsibility of the ship did not commence till it had actually received the goods into its custody, that there was in fact no "continuity of responsibility" between the land and the ocean carrier, and thereore the value of such Ocean Bills of Lading as a collateral was an entirely personal one dependent on the honesty of the agent who had signed it.

Mr. Cunningham further explained that though certain advantages were stated to be afforded, notably to shippers, by the present system, the risks run completely outweighed these, and though hitherto no losses might have been suffered, the door remained wide open for the perpetration of gigantic frauds. The only remedy merchants had to propose was, that all shipments from interior points in Texas should be similarly made as in other States, on Through Bills of Lading. At the same time, they were so alive to the desirability of disturbing existing methods as little as possible that they would welcome any proposal that would do this while affording them equal security. Mr. Cunningham concluded by moving the following resolution:—

"That an Ocean Bill of Lading issued against goods still in the interior when attached to a Bill of Exchange drawn at an interior point is not a satisfactory collateral to those financially interested; inasmuch as it is a misleading document as to facts, and is dependent for the fulfilment of the conditions as to final delivery therein contained on the personal responsibility of an individual who has control of the goods when passing from the custody of the land to that of the ocean carrier."

Mr. Fritze, of the Bremen Cotton Exchange, seconded the resolution.

Mr. R. Hobson, representing the Central Association of Bankers, London, said that he was authorized to state on behalf of the English bankers that the system of this Ocean Bill of Lading was "of a most objectionable character," and one which gave "no security whatever" to the bankers. Considering the extraordinary extent of the credit upon which the cotton crop was moved, it was most essential that the validity of the document which the bankers took as collateral should be established beyond doubt. Mr. Hobson continued: "I tell you quite clearly on behalf of the bankers, who accept a very large amount of bills against the cotton crop, that this Ocean Bill of Lading, as it stands now, is not a satisfactory document and cannot be taken by them. We want to make our collateral security a good one, and we want you to do it in as short a time as ever you can."

(N. B.—The attitude taken up by Mr. Hobson was afterwards endorsed by all the banking interests represented, including Mr. Roese, Deutsche Bank, who said the bankers should all endeavor to communicate the text of the resolutions to their clients and should inform their friends in America, so that they might be aware of it.)

The resolution was then put and carried nem con.

The Chairman then called upon the Galveston representatives to explain the proposed Exchange Bill of Lading.

Mr. W. A. McVitie (representing the Galveston Maritime Association) stated that this Bill of Lading had not been put forward by his Association. At the same time, the Galveston Maritime Association was desirous of meeting the views of shippers, who were their customers, by giving them documents which they could negotiate, and which would relieve the steamer from the onerous responsibility of waiting for the cotton to arrive, in

the meantime not knowing whether the Railway Bill of Lading, upon which the Ocean Bill of Lading had been issued, was a proper document or not.

In connection with this, Mr. McVitie said the conference ought to bear in mind that whatever sort of document was framed it could not be a protection against fraud or forgery. The Texas banks would be utterly unable to finance the cotton crop if they had to wait until the cotton was alongside of the steamer. The question was whether a Through Bill of Lading afforded any greater security, as these Bills of Lading were signed at every point along the line by perhaps irresponsible parties, some of these stations being only open for eight to ten weeks in the season.

(N. B.—The correctness of this statement was afterwards called into question.)

Mr. McVitie asked why the interior shippers were not represented, and it was explained that the assistance of the Galveston and Savannah Exchanges had been asked to get delegates appointed for the interior shippers of Texas and Georgia; but as they had no organized association, and as it was found impossible to pick out individual firms, the invitations could not be sent on. Mr. McVitie then continued that the conference ought not to do anything which might hamper business, and he thought that this Exchange Bill of Lading, or receipt, or whatever one liked to call it, stated the facts, as a Bill of Lading ought to do, and if the bankers could see their way to accept it the steamship lines would be willing to give such a document to the shippers.

Mr. Percy Dews (representing the Manchester Cotton Association) having stated that he was entirely in harmony with the views expressed by Mr. D. Cunningham, Mr. McVitie, at the request of the Chairman, formally proposed the acceptance of the Exchange Bill of Lading; but, not finding a seconder, his resolution fell to the ground.

The Chairman then proposed to consider the Through Bill of Lading.

Mr. J. Hope Simpson (Association of Liverpool Clearing Bankers) said that the question the bankers were concerned in was whether the Through Bill of Lading was safe or not. That it had been stated that such Bills of Lading were signed by Tom, Dick and Harry, at little wayside stations in Texas, and that the railway companies could repudiate such signatures.

In reply to this, the Chairman and Mr. Cunningham cited cases where the railway companies had been held responsible in a court of law.

Mr. H. B. Roper (Liverpool Steamship Owners' Association) stated that his association were in full sympathy with the Through Bill of Lading, and that he did not see any reason why the system from Galveston should be different from other American ports. In no case did he know of any difficulty, so far as receivers or bankers were concerned, and if the Through Bill of Lading were adopted it would have the hearty support of the shipowners trading to Galveston. As regards the statement that irresponsible men at wayside stations sign Through Bills of Lading, Mr. Roper said it was quite news to him, and it certainly had not come under his notice, but that in any case this difficulty could be easily surmounted by conferring with the leading railways interested.

Mr. R. Hobson (Central Association of Bankers) then proposed the following resolution:—

That no Bill of Lading will be satisfactory except—

(a) A Through Bill of Lading so drawn as to establish the continuity of responsibility of the several carriers from the interior point to the ultimate European destination; or

(b) A Port Bill of Lading duly signed on behalf of the steamer by the captain or other authorized agent.

This resolution was seconded by Mr. Roper, and supported by Mr. William Parr (Galveston Maritime Association), who said that there were only two ways of handling cotton either for the steamer's agent to give a receipt for it when he receives it, or to handle it on a Through Bill of Lading.

In reply to a question by Mr. S. B. Murray (Central Association of Bankers), Mr. J. Hope Simpson stated that the intention is to establish that the railway companies shall be responsible for the cotton while in their possession, and they shall not be freed from that responsibility until the cotton is handed to the ship's duly authorized agent, so that the moment the railway company's responsibility ceases the ship's responsibility begins.

The resolution was then put and carried unanimously.

A sub-committee, consisting of Messrs. Bates, Cunningham, Hope, Simpson, McVitie, Parr, Reynolds, Roper, and the Chairman was then appointed and at the adjourned meeting they put the following resolution before the conference:—

RESOLUTION.

That the members of the conference, having carefully considered the various forms of Bills of Lading, unanimously resolve:—

1. That the proposed Exchange Bill of Lading is not a satisfactory document.

2. That an Ocean Bill of Lading issued against goods still in the interior, when attached to a Bill of Exchange, is not a satisfactory collateral to those financially interested, inasmuch as it is a misleading document as to facts, and is dependent for the fulfilment of the conditions as to final delivery therein contained inter alia on the personal responsibility of an individual who has control of the goods when passing from the custody of the land to that of the ocean carrier.

3. That no Bill of Lading will be satisfactory except—

(a) A Through Bill of Lading so drawn as to establish the continuity of responsibility of the several carriers from the interior point to the ultimate European or other foreign destination; or

(b) A Port Bill of Lading duly signed on behalf of the steamer by the captain or other authorized agent after receipt of the goods into the custody of such captain or authorized agent at the port of shipment.

4. That the railroad companies be approached with the request that, in order to insure validity of Through Bills of Lading, their agents at the compress or junction points only should be permitted to sign such Bills of Lading.

5. That a sub-committee be appointed to draw up a report of this conference, and to take any such steps as may be necessary to carry out the above

resolutions, and to support any movement they may think fit for obtaining the adoption of a uniform Through Bill of Lading.

This resolution was proposed by the Chairman, and seconded by Mr. Cunningham, and carried unanimously.

In conformity with the instructions of the conference, copies of this resolution have been forwarded to the American railway companies interested, and to the Galveston Maritime Association, asking for their co-operation.

Another question which was alluded to at the conference, but which was left to be settled between the owners of goods and the land carriers was the basis of settlement in case of loss through the fault of the railway companies.

Should goods be destroyed by fire, lost at sea, or be short delivered from the ship, the owner receives approximately their market value, but if the land carrier defaults he may claim to settle at the shipping or invoice value.

Under existing conditions of trade this is manifestly unjust, for probably all shipments to this side are, so to speak, insured against market changes by being hedged with futures. If, then, the market should advance between date of shipment and the time inability to deliver is declared by the land carrier, the owner under the existing arrangement loses an amount equal to such advance, and, as the goods are presumably then still in existence, whoever holds them is a gainer to an equal amount. Thus in advancing markets the carrier, however careless he may be in handling goods, cannot be a loser, and may be a gainer. As this is a very vital question from the merchants' point of view, the railway companies have already been approached, and it is to be hoped a satisfactory conclusion will be arrived at.

In concluding their report, the committee consider that particular attention should be drawn to the firm attitude taken up by all the leading banks, not only in this country, but in France and Germany.

It is also understood that it is the intention of the European bankers to draw the attention of their correspondents and bill buyers generally in America to the unsatisfactory character of the Ocean Bill of Lading, when attached as a collateral to an Interior Bill of Exchange, and to inform them that, after sufficient interval has elapsed to allow of existing arrangements being changed, such documents may run the risk of being declined by the banks.

No more reasonable request was ever made than this one from the European cotton trade that an American bill of lading shall cease to be a false certificate of shipment, and shall in future mean what it says; namely, that so many bales of cotton have been shipped. The justice of the demand is recognized by "The Cotton Journal" of Atlanta, which also points out the remedy for the difficulty:

From a careful reading of the above resolutions it would indicate that the spinners, handlers, bankers and others interested in the foreign trade of American cotton are taking active steps to bring about changes in the present methods of buyers and exporters on this side in the future shipments of cotton to Europe. The cotton people of Europe are saying that they are getting tired having Bills of Exchange drawn against them for cotton presumed to have been delivered at shipside or at our ports when as a matter of fact the cotton is lying at some point in the interior and may not go forward for months. They are opposed to paying drafts attached to Bills of Lading unless the cotton has been actually receipted for by the captain of the vessel which is to carry the shipment abroad. The whole trouble has come about through the tremendous congestion of the cotton business at interior points in the States and the inability or failure of the Southern railroads to move the crop promptly to the ports. If the exporters cannot collect their drafts on cotton which they have bought for export until it can be promptly moved and delivered at shipside it will work a great financial hardship on them. Yet this is just what is proposed in the above resolutions and the buyers on the other side cannot be blamed for wanting their consignments for which they have heretofore paid, promptly delivered. The quickest way out of these difficulties is for the South to insist upon gin compression which would enable the railroads to move the crop within half the time and with one-fourth the present rolling stock required. The crop is getting to be too large to be handled in the old fashioned way and changes must be made to meet the new conditions. In many instances shipments of cotton to Europe were delayed for months last season, long after the exporters had been paid by the foreign merchants or spinners, and the cotton which should have gone forward promptly was lying around depots in the weather and gradually damaging. We hope no drastic measures will be taken by the foreign bankers that would delay the prompt payment of drafts and we hope also that the cotton will in future be moved more promptly by the railroads.

We hope drastic measures will be adopted to end the abuse, for those who are responsible will not apply the remedy until their bank accounts are touched.

According to a report issued by the Department of Commerce and Labor, Argentina in 1906 took the largest proportion of American manufactures, 98.6 per cent., China coming next with 95.98 per cent.

Cuba sends 86 1/2 per cent. of its exports to the United States and takes 45 1/3 per cent. of its imports from this country; the exports are chiefly sugar and tobacco, and the imports railway supplies, lumber, manufactures of all sorts, foodstuffs, and coal.

MEETING OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

The semi-annual meeting of this association will be held at the Hotel Willard, Washington, D. C., on Thursday and Friday, Oct. 3d and 4th. On Friday over a hundred European delegates to the Cotton Conference at Atlanta will attend the Washington meeting. Papers are expected on the following subjects:

A Few Suggestions on Merchandising the Mill's Product.

American Shipping on the Deep Seas.

An Analysis of Usage.

Black is White, the Customs Administration Color-Blind.

Cotton Manufacturing and the Fire Waste.

Economic Position of the New York Cotton Exchange and its Relation to the Cotton Trade.

Evolution of the Lug Strap.

General Questions of Cotton Mill Fires.

Inland Transportation of Cotton.

Loading and Shipment of Cotton.

Present and Future Conditions of Cotton Productions and Manufacture in the U. S.

Tests in Cotton Mills.

Use and Abuse of Warp Stop Motions and other Automatic Appliances on Power Looms.

A COMBINE IN THE MEN'S WEAR TRADE.

The German manufacturers of men's wear goods have formed a combination under which they require buyers of their goods to sell at the prices named by the combine. The new arrangement starts off with the rule that buyers must sell at an advance of 25 per cent., under penalty of withdrawal of further trading relations with the manufacturers.

In their defence of the new method of doing business the manufacturers claim that the restrictions apply only to certain styles of woolens and worsteds which are specially designed and protected by trade-marks. They claim that heretofore many of these styles have been sold at an insufficient profit, sometimes at a loss, demoralizing the whole trade. It is to end this condition that the guarantee of a minimum profit is in future to be required of jobbers.

FOREIGN DUTIES ON BRITISH GOODS.

An English statistician has compiled some interesting figures showing the percentage and amount of the duty collected by foreign countries on British goods passing their custom houses. The average rates for the various countries, including both free and dutiable goods are:

Russia	131 per cent.
Spain	76 per cent.
United States	73 per cent.
Portugal	71 per cent.
Austria	35 per cent.
France	34 per cent.
Italy	27 per cent.
Germany	25 per cent.
Belgium	13 per cent.
Holland	3 per cent.

For the five years from 1900 to 1904 inclusive the value of British goods exported to these ten countries amounted to $3,400,000,000. The average duty was 56 per cent., making a total of $1,915,000,000 collected by these countries on imports from the United Kingdom. The British writer evidently thinks the British exporter pays the foreign tax, for he says: "We paid $1,915,000,000 for the privilege of selling goods worth $3,400,000,000. During the same period we bought goods of them worth $7,500,000,000 and, excepting such as came under the ordinary excise, charged no duty."

The moral of all this lies in the application of it.

The country which draws the largest proportionate share of its imports from the United States is Honduras, which in 1905 took 73.7 per cent. of its imports from this country.

In 1906 New Zealand exported 27,779 tons of hemp of which the United Kingdom took 21,408 tons and the United States 2,672 tons.

TEXTILE PROCESSES.

WOOLEN CARDING.

(Continued from August.)

Another traversing mechanism for intermediate feed sometimes met with is given in connection with Fig. 4 and which is a front elevation of said mechanism showing the principal parts of it. This traversing mechanism includes a pair of specially shaped feed rolls which are driven always in the same direction from a rack through a special arrangement to be described.

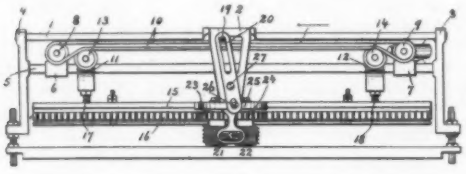


FIG. 4.

Referring to the illustration, 1 indicates a round rail on which the traveler, 2, moves backward and forward, said rail being fixed in the side pieces, 3 and 4. A rail, 5, also fixed in the side pieces, 3 and 4, carries brackets, 6 and 7, for holding sprocket wheels, 8 and 9, over which the link chain, 10, is passed, the sprocket wheel, 9, being positively driven through suitable gearing, not shown in the illustration. Brackets, 11 and 12, are also provided on the rail, 5, for holding sprockets, 13 and 14, which support the lower side of the chain, 10, as near to the top length as possible. The brackets, 11 and 12, also support a bar, 15, carrying a stationary rack, 16, by means of adjustable bolts, 17 and 18. The chain, 10, carries a pin, 19, extending from its side, said pin fitting loosely into a slot in a pivoted arm, 20. This arm, 20, has a flange extending back into the opening in the carrier, 2, which reduces the strain on the pin, 19, when the latter is moving the traveler across on the rail, 1.

Situated in the lower part of the traveler, 2, is the feed roll mechanism, consisting of grooved feed rolls, 21 and 22, the former being on the same stud with a gear, 23, while the latter roll is on a stud with a gear, 24, said gears being always in mesh with each other, although only one at a time is in contact with the rack, 16. The studs of the gears, 23 and 24, are carried in a swiveling plate, 25, which is pivoted and has a rod, 26, extending up from it and through a hole in the lower end of the arm, 20, by which the gears, 23 and 24, are alternately thrown into and out of contact with the rack, 16, when the direction of motion of the traveler, 2, is reversed, the arm, 20, being pivoted at 27 in the arm of the traveler.

The action of the parts is as follows: Say the chain is to move in the direction of the arrow. The sprocket, 9, being positively

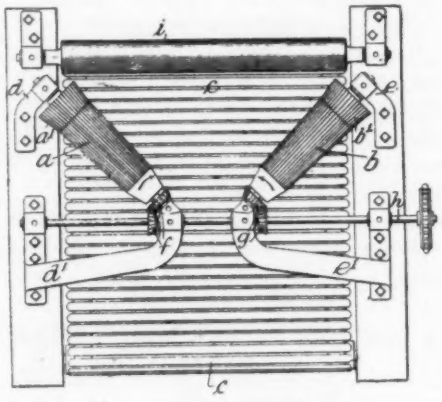


Fig. 5.

driven, in turn drives the chain, 10, and as the pin, 19, is in contact with the traveler it moves the latter along with it at the same time pressing the arm, 20, against one side of the opening in the traveler, which action causes the rod, 26, to be moved to the right, thus putting the gear, 24, into gear with the rack, 16, which is in this manner rotated as the traveler moves across the feed apron. This movement continues until the pin, 19, passes around the sprocket, 8, and starts back in the opposite direction, which will cause it to press the arm, 20, against the other side of the opening in the traveler, 2, and this motion in turn causes the rod, 26, to

be moved over, thus putting the gear, 23, in mesh with the rack and the gear, 24, out of mesh. This arrangement will cause the rolls, 21 and 22, to always revolve in the same direction, so that the direction of motion of the traveler will not effect the delivery of the sliver. The feed rolls, besides being grooved as seen, are also made with ratchet-like teeth, thus enabling them to properly grip a considerable variation of slivers.

To equalize the fibres in the sliver as laid by the self feed apron, the feed apron of the carding engine in connection with the film delivered by said carding engine is the object of a late English invention, and which will be readily understood by consulting the accompanying illustration, Fig. 5, which is a plan view of the feed lattice sheet of a carding engine showing the new mechanism applied thereto.

A description of the construction and working of the device is best given in connection with quoting letters of reference accompanying our illustration and of which, a, b, represent two rollers arranged diagonally to right and left above the feed apron, c, and supported in bearings in brackets or pedestals, d, d^1 and e, e^1, bolted to the side frames of the carding engine. Rotary motion is communicated to the rollers, a, b, by bevel gears, f, g, from a transverse shaft, h, driven by chain and sprocket wheels from any suitable rotating part of the carding engine. The rollers, a, b, are of conical shape, and are provided with fluted or roughened peripheral surfaces; the outer ends or largest diameters of the said rollers, for better efficiency, being formed at a slightly different angle at a^1, b^1, to engage the edges of the layers of fibre laid on the endless feed apron, c. Each roller is set at a suitable angle to act upon the slivers of fibre laid on the feed apron, c, and the angle or position of the rollers, a, b, is adjusted as required by the nature and condition of stock under operation. The rollers, a and b, are driven in the direction of the arrows, and their action on the material, being carried forward by the apron, c, toward the roller, i, is to draw or stretch out the fibre or web from the centre toward each side of the apron, c, so that additional fibre is fed towards the outer edges, in turn making up for the portion of fibre which is drawn by the action of the "fancy" of the carding engine, toward the centre and equalizing the film by which means the production of faulty outer or side roving ends at the condenser of the finisher card is minimized.

The claim of advantage for this attachment to self feeds is that the carding engine to which it is attached, can be driven at a higher speed, resulting therefore in a greater production per set of cards, besides said production being of an improved quality, i. e., result in a more level and uniform roving. If it should be desired to loosen and force the material from the sides only, if the slivers or layers of fibre are laid too broad upon the feed apron, c, the direction of motion of the rollers, a, b, can be changed, or the angular positions of the rollers might be changed; the direction of rotation of the rollers, in whatever angular position they are supported over the feed apron, c, either stretching or forcing the fibre from the centre towards the sides so as to neutralize the action of the "fancy" of the carding engine, as previously referred to.

THE FINISHING OF COTTON GOODS

A frequent evil in the finishing room is the secrecy with which the finisher guards his recipes, i. e., keeps secret his knowledge gained from his practical experience. By a good finisher is meant a workman who is capable of finishing according to a given recipe; who is able to set his finishing machine precisely for all kinds and qualities of goods delivered to him, who understands exactly the contents of his sizing tub, and is able to use his knowledge to the best advantage, and who is, therefore, able to produce a perfect finishing effect.

The agents for finishing cotton fabrics can be classified in such as (1) provided for the purpose of thickening, i. e., serving to stiffen the fabric under operation, and which comprise corn, wheat, rice, potatoes, tapioca, chestnut, sago, arrowroot, etc., as well as starch made from these substances. (2) Finishing agents of an adhesive nature are: gum, dextrine, glucose, and resins, glue, sea

weed decoction, Iceland moss, etc. (3) Finishing agents for making the fabric supple and smooth, i. e., softening or hygroscopic substances are: paraffin, stearin, glycerine, oils, tallow, lard, sweet oil, cocoa oil, palm oil, beeswax, Japan wax, soda ash, ammonia, bone fat and horse fat, borax. (4) Finishing agents for filling, i. e., substances for giving weight to the cloth, are the chlorides of magnesium, zinc and barium, china clay, kaolin, sulphate of baryta, gypsum, chalk, sulphate of lead, sulphate of lime, plaster of Paris, Glauber's salt, oxide of lead, sulphate of alumina, silicate of alumina, talc and silicate of soda. (5) Finishing agents of an antiseptic effect are boracic and chromic acids, arsenic, arsenate of soda, sulphate of iron, copper, zinc and sulphate of alumina, nitrate of soda, tannin, thymol, acetic acid, creosote, strychnine, salicylic acid, carbolic acid, combinations of cyanogen, oxalic acid, camphor, as well as the chlorine combinations of potassium, sodium, barium, magnesium, aluminum, mercury, lime and zinc. (6) Substances for coloring size, i. e., shading additions to the finishing agents are: the aniline blues of all kinds, cobalt blues, ultramarine, indigo, carmine, sulphate, or acetate of indigo. (7) Substances used to make fabrics waterproof are: greasy matters of all natures, rosin, paraffin, tannic acid, siccative or drying oils, salts of alumina, alums, carbonate of magnesia. (8) Substances destined to render tissues incombustible are: boracic acid, borax, phosphate of soda, phosphate of lime, phosphate of ammonia, carbonate of magnesia, tungstate of chrome, alum, sulphate of soda, silicates in general, gypsum, sulphate of zinc, salts of magnesia.

All the flours have a tendency to the formation of mould, and the finishing agents prepared from them becoming mouldy after standing for a time, for the reason that by the friction of the millstones in grinding the wheat, glucose is formed, a very nitrogenous substance, readily liable to become mouldy. Flour also contains gluten, gum and fat.

With reference to starch, the gluten is removed from the flour either by fermentation, elutriation and washing, or by a chemical process, for which reason the starch does not as readily become mouldy, hence used by finishers in place of flour, although it is more expensive than the latter.

When wheat flour is stirred into water, a few days before use, it enters into an acid fermentation, and a part of the gluten is expelled by removing the sour water and washing the flour a few times, obtaining in this manner a more or less pure (wet) wheat starch called "sour sizing." Such starch, however, only contains from 75 to 80 per cent. of the flour and consequently will not give the heavy filling that might have been obtained with flour.

Farina or potato starch is another important and most frequently used substance for thickening in the finishing process, what kind of starch to use depending upon the character of the fabric to be finished. The use of starch paste is based upon the fact that the paste surrenders its water to the porous fabric, and by drying upon it, in turn forms a coating, which by steaming, calendering, or mixing in a hot condition, results in dextrine.

Corn starch is advisable to use when a stiff finish is required for the fabric under operation, it being cheaper than potato and wheat starch, and consequently permits a greater addition of softening agents, without raising its price beyond that of the other starches.

Rice starch, although little used, is treated in the finishing process similar as farina and wheat starch, and with suitable additions makes a nice finishing agent.

With reference to stiffening capacity, cornstarch takes the first place, to be followed in turn by rice, wheat and finally farina starch. Gum finishes, in an ordinary, moderate decoction, have excellent binding capacity for the admixtures, however making the structure hard and stiff.

Dextrine is used in few cases for special purposes, it being easily soluble in water, hence in some instances is used as a substitute for gum arabic, having a great binding capacity and giving a lustre to the fabric thus treated, however without additions it gives a paper like feel to the structure.

Glucose readily decomposes and forms mould, hence is little used. Resins, more particularly the bright colophony, are used by adding one-half part soda to one part

colophony and mixing with five parts oil, forming in turn a resin soap, which is a good lustering agent. The same result is gotten by adding a quantity of beeswax to the finish.

Glue, whether used alone or together with starch, imparts great stiffness and firmness to the fabric under operation; however, additions of iron salts and alum to a glue finish diminish its binding capacity, whereas dilute sulphuric acid, concentrated acetic acid, or oxalic acid, prevent the gelatinizing of the glue, but without an injurious effect upon its adhesiveness. Glue when used for a finishing substance requires large additions of softeners, like for example tallow. Glue must only swell, but not become fluid in water, nor must it impart a color to the latter. Glue loses its capacity of gelatinizing by continued boiling, whereas acids have an antiseptic effect upon its solutions, keeping them a long time in such condition. Gelatine is the best kind of glue, whereas jellies or fluid glues are inferior substances.

When dealing with flour and starch finishes, the overseer in charge must carefully examine whether the substances to be used by him are pure, ascertain their water percentage as well as investigate with reference to adulterations in the product given him to use, i. e., whether cheaper grades of starch or earthy substances have been added in order to produce weight, for the sake of profit to the dealer, and when it will be found that the product sold at the lowest price is not always the cheapest in the end.

Another feature he must take into consideration is to be sure that the kind of starch given him is the proper one to use, or if another kind would produce more satisfactory results, i. e., whether to use farina, wheat, corn or rice starch.

The by-products to use in connection with the starch he also has to carefully determine, i. e., whether a dextrine or a glue finish or a mixed finish is required. He must also consider the proper softeners to use, if such is required, i. e., are additions of glycerine, fats, tallow, soap, etc., required, and if so will no decomposition take place, again will the colors not be attacked by these additions?

A careful consideration of points quoted is required, for the fact that if the finishing substances are not properly selected and besides amalgamated, they will result in an imperfect finish, a finish which will not fill the interstices between the interlacing of the warp and filling, a composition which will gum up the rollers, drying very slowly if at all, in turn smearing the clips of the tentering machine, as well as all the rollers with which the fabric during the drying process comes in contact with.

In order to ascertain in a practical way whether farina or wheat starch is of proper quality, enter the substance under consideration in water. If then the starch precipitates at once, it shows that in its original state it held much water. Becoming cloudy, showing bubbles or foam, or both, emitting a bad smell, collecting dirt, etc., shows the overseer that the starch under consideration is of a second quality, for the fact that the slower the starch intermixes with water, the better its quality, the other points quoted before explaining themselves without explanation.

Wheat starch when boiled should not precipitate upon the bottom as a firm mass, since this indicates the presence of farina or flour. Always keep the strength of a finishing mass uniform, remembering that a starch finish boiled for a short time has more body than one boiled for a longer time, for the fact that in the latter instance, a soluble starch flour may be formed, resulting finally in dextrine by additions of fat with an alkaline reaction, a feature to be omitted should the particular finish of the fabric require it.

A filling mass containing wheat starch or where wheat starch predominates, requires more boiling compared to farina or a mass where the latter predominates, in the latter instance requiring less boiling.

When the finishing substances does not draw water nor become glazy and does not lose its adhesiveness, we then may consider it has been sufficiently boiled. When the starching substance possesses only slight binding power, when the paste separates water and it becomes watery and does not fill nor cover the fabric finished with it, it then is a sign of a poor substance.

Its capacity to form a paste may be said to be the principal merit of starch, after which its freedom from adulterations being also a

most important item to be considered. It must make a thoroughly homogeneous paste, that is, swell in boiling water into a thick gelatinous mass. At first the paste is perfectly homogeneous, but afterwards it sinks and combines, begins to form lumps, and water collects on the top. The value of the starch for forming a good paste increases with the quantity of water it is able to absorb and with the length of time that transpires before it forms into lumps.

The different kinds of starch can be tested in the following manner: Five parts of starch powder are dissolved with 20 parts of cold water; 230 parts of boiling water are then poured in, and the whole is thoroughly mixed. This paste is best made in a porcelain dish. It is then allowed to cool to the temperature of the room, after which it is poured into glass vessels of equal width. After standing for several hours the difference in the paste will be seen. At first, the freshly prepared samples of the paste solution were all of the same appearance, but soon the paste becomes clear and the starch deposits slowly. With better grades this will take place more slowly than with the inferior kinds. Glass vessels are best to use, and if these are shaped like narrow cylinders, the observation can be satisfactorily made, as they afford the means of closely examining any lumps that may remain undissolved.

The accidental percentage of soda contained in the starch should be considered. White specks appearing on the cloth, upon a careful investigation may show that an alkaline reaction of the starch has taken place, and that the specks are caused by the soda, which separates phosphate of lime when glue is boiled with soda.

In connection with the sizing of cotton prints, the work of the printer may be greatly marred or enhanced according to the kind of finish given the fabric. No rule can be laid down on account of the immense varieties of the texture (ends and picks per inch, counts of yarn) used. Only in connection with very heavy goods is the filling process omitted, these goods being as a rule only calendered and pressed. Very light, flimsy structures may be converted into very respectable cloths by a judicious sizing, and coarsely set fabrics may often be sized on the back until they possess the appearance and stability of goods containing 50 per cent. more threads per inch.

The process requires great care, for the cloths are far from being in a sufficiently strong enough state for anything but careful handling. Washing is out of the question, for the best washing machinery would rub the loosely set threads out of position, even if the price of such cheap material would allow of the expense of a washing process. After sizing these loosely woven cottons on the back, they are in turn dried. Drying on the drum cylinder dryer is not to be recommended, for the pressure of the feed rollers, even when the cloth only passes over such, has a tendency to force the filling through the interstices on to the face of the fabric, a feature which is apt to cause white streaks to appear on the cloth in its dry state. This disadvantage is overcome by using tentering frames and drying with hot air, and when these streaks are avoided. Some finishers on these machines prefer selvage pins to nippers, claiming that the latter press the size through and on to the face of the cloth all along each selvage.

Boiled starch is not advisable for using in connection with these goods, for which reason a mixture of wheat and potato starch with soda lye should be used, after being neutralized with sulphuric acid, and mixed with china clay as the filling material. It will be readily understood that the percentages of the various substances composing the filling mass must be selected to suit the kind of machine in use and the quality of the material.

A recipe is given thus: A stock solution of finishing gum is prepared from dextrine, in the proportion of 110 lbs. of dextrine to 16 gals. of water. This solution is kept in a cool place until it becomes stiff enough for the stirring rod to remain upright in the middle of the barrel. A stock solution of size is next prepared with 44 lbs. wheat starch and 48 1/2 lbs. of potato starch, stirred together with 18 1/2 gals. of water; then under continual agitation 24 lbs. soda lye, 36° Be., mixed with 105 1/2 gals. of water, is slowly added. This should be thoroughly stirred for about two hours, and then

left standing for a few hours to allow the lye to act thoroughly and uniformly upon the starch. After this a mixture of 36 lbs. sulphuric acid 66° Be., in 5 gals. of water, is stirred in for the purpose of neutralization, and the mass examined with litmus paper. If the mixture is not found by this test to be thoroughly neutral, lye or acid, as the case may be, should be added until the error is corrected. The china clay is next added, 100 lbs. of which has been previously steeped for several hours in 13 gals. of water, and lastly some of the stock finishing gum mentioned before is added, the amount to use varying according to the quality of the work in hand.

In finishing printed goods, running of colors is a matter which must be avoided. A red printed upon oiled goods will smut very much more than if printed on unoiled material; furthermore, alizarine red or violet will smut considerably if it contains acid, particularly if the latter is very strong, which may be the case if a mordant is used which contains an insufficient amount of decomposed alumina.

The combining of the colors and the nature of the mordant has also a great deal to do with the smutting of the goods, especially if the cottons are to be steamed. The steam draws the color from one part of the goods to another, whereby great disadvantages arise.

The rubbing off of color is not always to be attributed to one cause. In some cases it is the fault of the great dampness of the colors, but in most cases sublimation is the actual cause.

(To be continued.)

THE IMPORTANCE OF THE SHEAR IN A WOOLEN MILL.

The shear is beyond question one of the most important, if not the most important, machine in the finishing room of a woolen mill, not only on account of the importance of the work it must perform, but also, and more particularly, because of the care and skill required to operate this machine and to keep it in perfect working condition. The modern shear with its list-saving appliances, is a marvel of perfection, brought to its present standard by a careful study of the special needs of the work to be accomplished. Years ago, this part of the shear, i. e., the list-saving appliances, was supposed to be nearly perfect, but some of its parts were composed of leather, which soon wore out, whereas now all of its parts are made of finely tempered steel, which work perfectly for a long time, if properly cared for. Every one who has any knowledge of this part of the work will understand something of the importance of keeping the machines in good order.

They come from the shop perfectly true in all their parts, and he who has the care of them must see that they are kept so, in order to insure perfect work. A hair's breadth variation, either in the grinding or setting of the machine, will have its corresponding effect upon the result—a matter which many have discovered to their sorrow.

There are many men, who, from long experience and careful observation, learn to master much of the work pertaining to finishing and who might be safely intrusted with the management of the work, were it not for this matter of keeping the shears in perfect running order. The other parts of finishing processes come more easily to the understanding, because the effect is more readily traced back to the cause and more easily corrected. But the real cause of a difficulty in shearing is not so readily discovered, and certainly not so easily corrected.

To become an expert in caring for the shear, it is first important that one should be thoroughly familiar with the running of the machine, and understand the purpose and action of all the screws that belong to it. He who has good mechanical skill will best succeed, other things being equal. He who has none will never excel. You can tell a man just how to grind a shear, but he will never do it properly until he has acquired years of practical experience. If a shear is out of order, either from the blades being out of true or the screws being improperly set, nobody is able to decide before hand just the mode of procedure before action, because the real condition of the machine is often made known only after the grinding of

the blades is begun, provided the grinding is done in the more ordinary way, by applying oil and emery with the blades in the machine. If the grinding machine is used, the operator is aided very much, but ordinarily not every mill has such a machine.

Besides a perfect knowledge of the machine itself, a competent shear tender must have a good knowledge of the different kinds of goods the mill makes, for he may be called upon to finish goods ranging from heavy overcoating to the lightest fabric, and knowledge of their requirements will enable the operator to better understand how to set the blades for them. This is a matter of no small importance, especially upon goods that are to be sheared very closely. If the blades are a trifle too high, or too low, the effect will be bad, whereas upon some goods it would not be noticeable.

In shearing cheviots or ladies' dress goods, that are only evenly clipped by cutting the end of the raised fibres, no evil result would follow; while if the goods were gigged and required a close or threadbare finish, it would require but a slight variation from what would be absolutely correct to cause considerable trouble. There are finishers who will work successfully for years in a mill upon one class of goods, with the reputation of being a first-class finisher, but if this mill changes to a different grade of goods or if the man leaves and takes a position with another mill that manufactures a different class of goods to that he has been accustomed to handle, he may fail completely, chiefly because he cannot adapt the shears to the new requirements, or, in other words, his skill is not sufficient to enable him to handle this new class of fabrics.

The chief points in caring for shears are to have them cut clean and run easily, without any jar or noise. Yet it is not always a bad sign to hear a slight noise made by the blades. Sometimes it may be occasioned by a slightly rough place or nick, or the corners at the end of the blades and if they are otherwise in perfect order, it would only be a waste of the blades to try to correct it by grinding. However, the finisher whose shears never run without singing or rattling should learn how to correct the fault.

The question may be frequently asked, how often must a shear be ground? The best answer to this is: Grind them as often as they become dull, or in other words, when they need grinding. In considering how long a shear ought to run without being ground, very much depends upon the kind of goods being sheared, whether they are heavy beavers, cheviots, kerseys, broadcloths, tricots or only light weight suitings, tropicals, or possibly 6-ounce dress goods; whether they are made from good clean wool or contain from 40 to 80 per cent. shoddy or mungo or extract, or possibly 50 or more per cent. of cotton or whether they are flocked, medium flocked or heavily flocked, etc., etc. On ordinarily good work and medium weight goods, a shear well ground and properly cared for, ought to run four or five months. Some finishers make a practice of grinding often, say every three or four weeks. By this means they keep the blades of the revolver as well as the ledger blade very keen. But they must remember at the same time that every time they grind, they wear away more or less of the blades, so that in the end their work proves very expensive to the mill. The most economical way is to grind only when the revolver is dull, for the ledger blade may be kept in good order by a careful honing.

WHEN THE BLADES REFUSE TO CUT WELL

without pressing them together too hard, they may be made to do good work by letting the ledger back a trifle so as to run lightly and then honing it. It is a common mistake to hone the ledger without letting it off slightly, for if the blades begin to run hard, the honing raises the edge so that they must bear harder and by being pressed so closely together, the revolver takes off the keen edge that the honing has produced, and the condition is worse than at first. A better way is to set the ledger back as directed—a little too much does not matter—then when starting again, press the blades together just enough to get good results and they will run more lightly and perfectly, doing good work as long as the ledger retains the edge thus produced and the revolver is not dull. When the ledger blade gets worn down so that the

bevel is quite wide, causing the revolver to run hard in consequence and hindering perfect action at the edge, the revolver may be raised a trifle, say from one-fourth to one-half turn of the screws in the top of the revolver boxes. This raises the revolver from the full width of the bevel, and brings it to a position where it acts on the edge of the ledger, thus causing it to run more lightly and cut better.

IN REGARD TO SETTING THE REST AND BLADES,

it should be done so that the cutting point of the blades and the highest point of the cloth as it comes over the rest come exactly together. If the rest is set too high, the revolver will bear on the cloth, while the edge of the ledger will be below the highest point of the cloth and the work will not be perfect. If the rest is set too low, it will bring the cloth against the ledger below the cutting point and cause it to bear too hard upon the cloth and prevent its free passage over the rest. Therefore, it will be evident that the rest cannot be set exactly the same in reference to the blades, for all kinds of goods, since the thickness of the cloth must be taken into consideration.

In all the work of caring for the shear, practical knowledge and skill are required, and a bungler will never succeed. Many a man has been obliged to surrender his position because of failing in this work, even though he may have been an expert in other branches.

It is very necessary, both, to have a good quality of heavy lubricating oil for the blades, and to see that the oil is properly and thoroughly applied to the swab. If the blades are allowed to get dry for want of oil and are run in that condition, they will heat up and the temper will be drawn out, and it requires but a moment to spoil a ledger blade in this way when once it begins to heat.

THE REVOLVER AND BRUSHES

should be thoroughly cleaned at least once a week. It is too often the case that the importance of the brushes is overlooked. The raising brush is supposed to raise all the fibres of the nap, leaving them erect upon the face of the cloth, so that they may pass up to the blades in a condition to be cut evenly, and it is very important that the brush should come in contact with the cloth just right to produce this result. If the raising brush is not close enough, it will not raise the fibres up thoroughly, while if too close, it will tend to lay the fibres back too far, so that the blades cannot do the work as evenly as they should. After the cloth leaves the blades, it comes directly in contact with the large, or laying brush. This brush is double acting, and its object is to lay the nap upon the cloth as it was before the cloth came to the raising brush. In this condition, the nap is ready to be raised again for the cutting operation on the next run. The brushes should be reversed occasionally, or taken out and changed end for end, by so doing the bristles will be made to act in the opposite direction and will do better work. If kept running one way very long, the bristles will be worn and bent in one direction and will not brush as well, by reversing the set of the brushes, they will do better work and wear more evenly.

The grinding of the shear is one of the most important operations connected with the finishing room, and as already intimated, to do it properly requires good judgment and considerable experience. One thing must be borne in mind, the ledger having a thin edge will become worn or dulled quicker than will the blades, because the shearing is done by a number of blades (10 to 14, according to the kind of rest used) working against one edge, the ledger and naturally the greater amount of friction this receives will wear it sooner than any one (or all) of the blades. It becomes evident, therefore, that the machine may fail to do good work although the blades themselves are sharp because the ledger is worn or dull, and since this can be honed and put in good condition by itself, in such a case it will not be necessary to grind the blades, but simply to take out the revolver and put the ledger in good condition and the machine will then do nearly as good service as when first ground. Hence it will be seen that the practice of grinding the blades every time they refuse to cut well, is both a needless waste of blades and an uncalled for trouble. Of course, the

revolver blades are continually getting duller, and must be ground when necessary, but the wise finisher will not waste his blades by grinding them when it is not called for. If the ledger only is dull, it can be made to do good work by a careful honing. When it becomes necessary to grind, the blades should be thoroughly cleaned and the brushes and rolls covered, so as to avoid getting them spattered with the oil and emery to be used.

When the blades are out of true, it is more difficult to grind them than where they are perfectly true and only dull, and the manner of doing the work would then have to be governed by the condition of the blades, which could only be determined by the man doing the work. Even if the circumstances are the most favorable, much depends on the care and skill of the workman, since it sometimes happens that when grinding the blades which are perfectly true, a man of limited experience or poor judgment will get them into bad shape. For this reason no specific rule can be given by which the work should be done; however, a few general points will be of interest. The belt should be changed so as to run the revolver backward, and the pulley, that usually drives it should be taken off, and the driving pulley for the raising brush put in its place. This reduces the speed of the revolver to one that is better for grinding than the usual speed.

BEFORE COMMENCING TO GRIND,

the ledger blade should be left off, so that it will bear very lightly upon the revolver, then with the revolver running the wrong way, a paste of oil and emery flour should be applied to the revolver by means of a strap or brush, being sure to apply it evenly all the way across. The blades should always bear together very lightly, and be drawn gradually together as may be necessary to promote the work, repeating the application of the oil and emery, and keeping in mind the necessity of having the blades come together so that they bear exactly alike all the way across. This is a very important matter and great care should be exercised, for if the ledger be drawn up too much in one place, the blades will be ground out of true and cause serious difficulty later. The blades should bear perfectly and run lightly, less and less emery should be used, and finally clear oil only should be used for a few minutes.

SIZING OF THE COUNTS OF THE YARN IN THE SPINNING ROOM OF A COTTON MILL.

The question of keeping the counts of the yarn spinning close to its required count, carries us back to the preparatory and carding processes, since for a yarn well up to its standard number, it is essential to keep every process or preparation distinct from lap to loom.

Let only an experienced and reliable hand take charge of the mixing, let the sliver and roving cans be painted in different colors for every section, keep a distinct color of bobbin for each division of sliver, roving and yarn. Let each process be reeled, i. e., tested as to proper size twice a day, and if there is any cause for doubt that the numbers are varying more than permissible, test more frequently, so as to detect the irregularity. Carder and spinner should compare these accounts with each other.

In mills where a variety of counts of yarns are spun, it is necessary that every precaution is taken to prevent the different kinds of stock, laps, sliver, roving and yarn from getting mixed. The best plan to prevent any chance of mixing is to have every lapstick, can and bobbin painted and varnished a distinctive color, and when then each division of stock, no matter in what state of advancement, is then known by that color, and easily kept distinct.

In some mills, the spinner may come in contact with two or more classes of graded stock, from which he has to spin numbers ranking according to the character of the staple. These vary in the hank roving, coarser or finer, so as to obtain a medium draft on the previous processes, as well as to supply the proportion the demand requires by the speeds of the machinery and the counts to be spun. In these mills the best of care must be taken with the roving and yarn, to keep them separate and provide means to

discriminate between them at a glance.

Crayons have been found to work well, so long as the help are instructed how to use the latter. By this means much trouble and loss are prevented, and besides the numbers are kept closer to those required to be spun.

To keep the weight as close as it is possible to its number, is however the best the spinner can do, since the more we investigate the subject how near to the actual figures, on paper, the spinner has to come to, the more convinced we get that our experience is very insufficient and disappointing, since cotton is not a material that can be handled with the same certainty as metal. As we become more acquainted with its structure we find it is one of the most difficult of substances to manipulate, the most liable to injury, and the most susceptible to outward influences of any of the textile fibres, for which reason spinners who claim that they can keep the counts of their yarns so that they will not vary more than one-half or even one number, are not acquainted with this business. The peculiar processes of carding and spinning, the conditions of the climate, the affinity of the fibre for moisture and the change caused by heated air, as well as the influence of electricity, all must be considered, and allowance made for them, so as to keep the counts of their yarns as close to the number they are intended for, as it is possible for them to do.

For sizing yarn as to its proper number, it is customary to use a small reel for reeling off one hank, and a fine pair of scales to show the weight in fractions of one hundredth of one grain.

The reel is made to hold in its base seven bobbins and measures around its circumference 1 1/2 yards. By means of a worm running in a 80-tooth gear, a bell strikes when 80 revolutions of the reel are made (80 × 1 1/2 =) 120 yards of yarn then being wound on the reel from each bobbin, and which is termed a lea. The seven leas then wound on the reel, in turn constitute one hank, the standard of which is (7 × 120 =) 840 yards.

You can either weigh the hank and figure from it the proper number of the yarn, or you may test only one lea provided you don't care to waste so much yarn, or do not wish to go to much trouble. But in doing so, remember that a lea will only weigh one-seventh of what a hank would weigh, for which reason you must multiply the weight of one lea with seven, and thus obtain the weight of one hank for calculating by. There are 7,000 grains contained in one pound, and if you divide 7,000 by any number of yarn you are to calculate for, it will show you what one hank of that number should weigh.

Example: Suppose you want to test for number 40s yarn. Dividing 7,000 by 40 gives us 175 as the number of grains one hank of that yarn should weigh.

From information given, it will be an easy matter for the spinner to keep a memorandum of weights per hank of the different counts of yarns he is spinning in his mill.

CARBONIZING WOOL.

The carbonizing of wool is a process for removing, by chemical action, various vegetable impurities from raw or washed wool; these impurities, such as straw, burrs, vegetable fibres, etc., if not removed, seriously interfering with the spinning, carding, etc., of the wool fibre and making it impossible to produce a fabric free from defects.

Mechanical means for taking out these impurities from the wool or wool waste are not as satisfactory to the manufacturer, since by means of these, said vegetable impurities are not as successfully or economically removed, i. e., are only removed therefrom with considerable waste or destruction of wool fibre, for which reason chemical processes are preferred, except for the grosser and more easily separated impurities.

The various chemical processes are all based on treatment of the wool with a solution of a reagent that will act on the cellulose of vegetable matter without affecting the animal wool fiber, after which the mixed mass is heated in a drying chamber until the vegetable fiber is carbonized, or broken down, when it can be readily beaten or shaken out from the unaffected wool fibres.

The most commonly used method of carbonizing wool is the sulphuric process, also known as the liquid or wet process. The

method of procedure is as follows: The wool with its burrs, etc., is steeped in an aqueous solution of sulphuric acid of about 2° to 4° Tw. (or 3° to 4° Be.) until the vegetable matter is thoroughly saturated with the acid liquor; the mass is then removed, the excess of liquid squeezed out and it is now placed in a drying chamber and heated at a fairly high temperature, until the vegetable fiber is thoroughly disintegrated. During this drying, the acid absorbed by the vegetable matter becomes more and more concentrated and breaks down the cellular structure of these impurities, so that they are readily removable by beating or shaking.

The wool should then be thoroughly washed in water containing a small amount of alkali until there is no acid left in the wool, then rinsed in clear water and dried as usual. Care should be taken not to leave any appreciable amount of sulphuric acid in the wool, both on account of its deleterious effect on the wool in time and its possible interference with future dyeing processes.

There are other methods of wet carbonizing, based on the use of the chlorides of certain metals, such as the chlorides of aluminum, magnesium, etc., in aqueous solution. These processes are not as economical as the sulphuric acid process and hence are not so widely used. In the chloride of aluminum process, the wool is entered in a bath of aluminum chloride of about 6° to 7° Be., carefully handled and allowed to remain there a few hours, after which it is taken out and freed from excess of liquor. The mass is then heated in a drying chamber at about 194° F. for an hour or so, during which treatment the vegetable matter is disintegrated and can be removed by beating or shaking. The wool is then thoroughly washed in soft water with fuller's earth until all traces of aluminum chloride are removed. This process is less liable to injure the wool fibre than the sulphuric acid process, but is not quite as effective.

There is another method known as the dry or gas carbonizing process, which consists of treating the burry wool in a heated chamber with dry hydrochloric acid gas, the action of this on the vegetable impurities being similar to that of sulphuric acid. This process has not met with much favor, owing to the difficulty of handling the acid gas and its injurious effects on the help employed.

Waste or rags may also be carbonized for the removal of vegetable fiber therein, such as the cotton in mixed cotton and wool goods. The sulphuric acid process is used almost exclusively on account of its cheapness. The carbonizing is effected in the same manner as described for wool, the acid destroying the cotton fibers present and leaving in the form of cinders or dust, which can be shaken out easily. The residue after beating, etc., should be thoroughly washed to remove all acid.

THE TREATMENT

and choice of the carbonizing agent should be adapted to the nature of the material, whether loose wool or piece goods. Crude, undyed wool is best treated with sulphuric acid from 3° to 4° Be., while dyed wool, excepting that dyed with indigo, is carbonized best with chloride or aluminum. It is well known that acids injuriously attack dyed wool, and for this reason, it is advisable not to perform the carbonizing with mineral acids. Besides this, acid spots are very easily caused in dyed wool, but all trouble of this kind is prevented by using chloride of aluminum.

The wool to be carbonized is entered in a chloride of aluminum bath from 6° to 7° Be., and carefully handled, and the carbonizing fluid is permitted to operate for a few hours. The wool is then taken out, whizzed, dried upon hurdles at medium temperature and entered into the carbonizing chamber, which is heated to 194° F., and in which it is left for one hour. After removing the remains of the vegetable fibres, etc., in a suitable manner, either by brushing or beating, the wool is washed. When using the chloride of aluminum process, no deacidulation takes place, as is required when treating with sulphuric acid. A simple washing in soft water with fuller's earth expels the easily soluble chloride or aluminum.

Undyed wool is often carbonized in the yolk, which acts as a protector. This kind of wool, after it is freed from the adhering dirt by steeping in water, is saturated in a sul-

phuric acid bath from 3° to 4° B. The wool is then taken out, whizzed, and dried at a moderate temperature, and afterward carbonized in the oven at a temperature of 158° to 167° F. If this process is conducted carefully, such a wool will retain its natural softness and suppleness. The wool is deacidulated after carbonizing, by handling it for some time in a 5° B. soda solution, after which it is taken out and washed in clear water.

It is important that the carbonizing fluid is kept at the same degree throughout the operation, for it happens quite often that the bath will show the same degrees Be. as at first, when in reality the carbonizing has ceased. The operator is apt to forget that the material entered into the fluid introduces soluble substances, which pass into the fluid and keep the hydrometer steady and even ocasionally causes it to rise. When chloride of aluminum is used, the carbonizing fluid frequently registers the required number of degrees, whereas the active principle of the fluid or the bath has in large part been consumed. To prevent this occurrence, a cotton thread is fastened to the material to be carbonized, and as long as this thread, after drying is corroded, the fluid may be used. When this is no longer the case, however, it is advisable to let the fluid escape. The cotton thread alone may also be dipped into the fluid and then dried. This simple test will show equally well whether the fluid is still useful or not.

The remark already made about the inactivity of the chloride of aluminum bath, although the hydrometer may register the proper degree, also applies to the deacidulation bath, which in like manner may not act, although the hydrometer registers 5° B. Operators forget that the acid material is entered into the alkaline solution, resulting in a combination of sulphuric acid and carbonate of soda. This fluid—sulphate of soda—will no longer serve for carbonizing purposes, and it must be replaced by a fresh bath.

A simple way to ascertain whether the deacidulating liquor is still useful or not, is to dip a strip of blue litmus paper into the fluid. The liquor is still good if the blue color is not altered.

A better method for regulating and maintaining the strength of the acid bath is to remove a small quantity, from time to time, and test it with a freshly prepared solution of caustic potash or soda made of definite strength. This test may be conducted thus: Prepare a solution of caustic soda (sodium hydrate) of such strength that an equal volume of this solution will neutralize an equal volume of the acid liquor used, using litmus paper as an indicator. To test the acid liquor, measure off into a small cup or glass a definite volume, say ten cubic centimeters, then add gradually by means of a burette or pipette, the alkaline solution until it just neutralizes the acid liquor, using litmus or phenolphtholem as an indicator. If it requires just ten cubic centimeters of alkali to neutralize the acid, the acid liquor is of full strength; if a smaller quantity is required, it shows the liquor deficient in strength.

For example, if after entering a batch of wool for, say thirty minutes, it takes only nine cubic centimeters of alkali solution to neutralize ten cubic centimeters of acid liquor, it shows that the bath has lost ten per cent. in strength from neutralization of part of the acid by certain natural substances in the crude wool. Consequently, to restore the bath to its correct strength, an amount of acid equal to ten per cent. of the quantity originally used must be added.

Great care must be taken in adding the fresh acid to prevent it from being in contact with the wool before it is well diluted. The mass of wool should be pushed to one end of the vat and the acid mixed in at the opposite end and the whole contents of the vat should be at once mixed up.

Owing to the probability of the formation of salts of iron, which would injure the wool fibre, the vats used in the various wet processes should be made of wood and must not be fastened with any iron nails, etc., that can come in contact with the acid. Earthenware or glass vessels would be the best to use, the greater first cost would soon be repaid by the better results secured from their use.

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

SIZING COTTON YARN.

BY PROGRESS.

Despite the strides made in modern organic chemical research, practically nothing has been published or made public regarding the positively wonderful properties of cornstarch for textile purposes. As a rule, the users of starches for industrial purposes do not realize the chemical composition, the expense reducing power or the effect of the particular kind of starch they are using.

As a rule, the user realizes that a certain quantity of starch will increase the weight and tensile strength of yarns and fabrics. Very few users know the difference between the various starches. It is the purpose of this article to give facts, which may be verified and which will show that from every practical manufacturing point of view cornstarch is superior to any of the other starches known to the industrial world. Every statement made is based on practical experience and the most rigid and exhaustive research into the chemistry of starches and their industrial uses.

STARCH.

Starch is a vegetable carbohydrate which occurs abundantly in all plants; its general composition is $C_6H_{10}O_5$ or some multiple of these numbers.

The only means of distinguishing one starch from another is by microscopical examination, the difference in appearance and size of the granules affording the distinguishing test.

The average diameter of the starch granule is as follows:

Beetroot	.0016 inch
Millet	.0039 inch
Rice	.0087 inch
Corn	.0118 inch
Wheat	.0197 inch
Sago	.0275 inch
Arrowroot	.0550 inch
Potato	.0728 inch

Starch granules are not dissolved by cold water, alcohol or ether, but when starch is heated with water to 114.6° to 165.2° F. the granules swell and split open, forming a thick mass called starch-paste or size. By boiling the paste with a larger quantity of water, the starch particles become so finely divided that they pass through a filter and, if boiled for a long time the solution becomes clear and the starch is rendered soluble.

The following table shows the relative difference in the preparation of sizes of the different starches:

Mixed with water	Commences to swell	Paste formation begins. Granules burst	Paste formation becomes perfect Size ready for use
Potato Starch	114.6° F	136° F	143.6° F
Corn "	120.2	131	143.6
Wheat "	122	149	153.7
Rice "	129.2	138.2	143.6
Chestnut "	126.6	132.8	138.2
Rye "	113	122	131
Sago "		150.8	159.8
Arrowroot "	150.8	150.8	165.2
Aurum "	122	136	143.6

STIFFENING POWER OF STARCHES.

The stiffening power of cornstarch acts on textile fabrics more uniformly than that of either wheat starch or potato starch. In the paste, the starch granules of wheat starch are contained in the form of gelatinous lumps, which are not so large as those of potato starch, look better but are not so smooth as cornstarch.

The paste of cornstarch remains unaltered if exposed to the air for about ten to eleven days, while potato starch paste, after a day's exposure turns acid, falls down, softens down, sours quickly, affects dyes, spoils warp and after a few days separates into a gelatinous mass, over which a watery and sour liquid forms.

Potato starch makes a size which is stiff and harsh, requires an extra amount of softening and does not penetrate the fibre or fabric thoroughly. Cornstarch size is uniform in its results, gives body to both warp and fabric, penetrates the fibre thoroughly,

strengthens and gives a handle and body feel to yarns and fabrics unequalled by any other starch size.

The relative value of the starches for textile uses, taking cornstarch as a basis, is as follows:

Cornstarch	100
Rye Starch	94
Wheat Starch	94
Barley Starch	91
Arrowroot Starch	88
Potato Starch	80
Sago Starch	80
Tapioca Starch	80
Farina Starch	76

TO PREVENT DECAY OF STARCH.

Starch is not fermentable, but like all other organic substances is subject to decay, although in a lesser degree than many other organic matters. It becomes musty when stored in damp, poorly ventilated storehouses. This may be looked upon as the first stage of decay, easily remedied by drying with gentle heat or allowing dry air access to the starch. In general, cornstarch withstands this tendency with greater energy than most other starches or vegetable substances. All starch decays easily and quickly after being made into a paste or size solution. The size, when exposed to the air in consequence of a milk-sugar formation, often sours. This can be prevented by the addition of acetic acid. Experience proves that cornstarch size remains good and sweet for a longer period of time than any other starch. Practical tests show that cornstarch used for thickeners remains sweet a longer period of time than wheat or any other starch.

APPLICATION OF SIZE TO YARN.

The process of sizing is a very important factor in the preparation of cotton yarns. Cotton fibre in itself has not the closeness or tensile strength necessary to withstand the vibration and pull of the heddle in the weaving process; therefore, it requires a strengthening and lubricating material which will so thoroughly penetrate the fibres as to make them so adhere to each other, giving the tensile strength necessary to make a strong compact smooth thread.

Successful sizing requires not only thorough saturation of the yarn, but also thorough and rapid drying without scorching, the proper distribution of the yarn and the making of a hard, uniform, compact beam. The value of the size lies in strengthening, lubricating and softening of the yarn, so as to render it strong and pliable. If the yarn comes from the slasher too stiff or too soft it is hard to weave well; poor production and a larger percentage of seconds result, and, consequently, uniform sizing is absolutely necessary.

Weavers claim that half of the weaving is done in the slashing room, for no skill at the loom can bring good results from a poorly sized warp. The weaving room is often blamed for lack of production and poor quality, when the trouble is caused by poor slashing. When the slasher stops too long, the yarn is burnt or the size is caked. Sometimes the size becomes thinned by condensation of steam and poor sizing follows.

Cornstarch size has the most uniform starch consistency, i. e., the largest percentage of actual starch of any of the starches, produces a more uniform size, with greater penetrative powers. It has a greater affinity for cotton fabric and is more economical for use as size because less is required than with any of the other known starches. For this reason cornstarch is and can be used to replace any of the starches for use in the sizing and finishing of any yarn or fabric. Of course, when cornstarch is substituted for any other starch the quantity must be regulated in proportion to the starch value of the starch previously used.

On account of the variations in potato starch it is very difficult to give tables applicable to every case. I know from practical use and experiment, however, that one pound of cornstarch is equivalent to 1.2 to 1.7 pounds of potato starch.

Regarding the use of softener on the size for lubrication of the heddle eyes, consideration must be given to the humidity and temperature of the slasher room, to the densities of the mixtures and quality and character of the ingredients and above all to manner of boiling. The importance of sizing and preparation cannot be over estimated as it does more to make a cotton mill profitable or un-

profitable than any other department of the mill.

DEFECTS IN SLASHING.

Among the defects in the process of slashing are the following:

Burning or scorching of the ends.

Imperfect drying by which the ends stick to one another on the beam.

Surface sizing in which the size lies on the surface of the yarn and is likely to be rubbed off in wearing, due entirely to size being too thick.

Hard or boardy yarn.

Undersized yarn.

Soft beams.

Irregular or rough beams.

Beams with bad ends.

Excessive breakage of the threads.

Too much waste in end pieces.

Stains upon the yarn and discolored yarn.

Starch overdone destroys the qualities for which it is used. It must not get above the boiling point, otherwise it will splutter and little blebs or splotches will appear on the yarn as it goes on the beam. The secret of preparing size lies in the boiling. The moment it is thoroughly boiled the steam should be turned off.

Starch to be applied to yarns should be of such a character that it will adhere to them firmly not only while wet, but after the yarn has become perfectly dry. It should also adhere to the yarn even when submitted to the chafing action of the working parts of the loom with which the warp comes in contact. Whether for light, medium or heavy sizing, the size must, therefore, be of a uniform thickness and consistency throughout, capable of saturating the yarn thoroughly, and giving a good color.

PREPARATION OF SIZE.

In order to produce a size that will give the results desired, intelligence and a thorough knowledge of the reason for using the various ingredients are absolutely necessary.

It is particularly noticeable in a great many plants that not a man in the slasher rooms knows why softeners, antiseptics or whiteners are used in the size. All they know is that so many pounds of starch, so many pounds of softener, so many measures of blue and so many ounces of antiseptic will produce a certain result. If changes should occur in the water or in any of the working conditions and trouble result with the sizes, the slasher room help would not know what to do. It is for this reason that in this day of modern progress the most intelligent help should be used in the slasher room and they should be taught why the various ingredients are used. They should know, for example, that antiseptics prevent mildew in the fabrics, that softeners are used to reduce the harsh effect of starch alone as well as to soften the yarn and lubricate the heddle eye. At the same time the popular fallacy that certain starches must be used to produce certain results should be removed from their minds, because the value of the size lies in the starchy contents and not because of the name of the starch. It has been proven that cornstarch in proportionate quantities will produce the same effect and replace any other known starch.

Size preparation is the mixing in proper proportion of the various ingredients required to produce the results desired, and depends upon the following points:

a. Class of fabric to be woven.
b. Weight of fabric or yarn.

The ingredients to be used are regulated to suit the following conditions:

1. Twist of yarn.
2. Number of yarn.
3. Fabric to be woven and its uses.
4. Increase of weight required.
5. Humidity of the atmosphere in the weave room.
6. Character of the water used.

These points being determined we know the ingredients as well as the consistency of the size required for the fabric.

Owing to the fact that it is necessary to vary the ingredients with variations in the temperature and character of the water used, it is impossible to give a list of proportions of ingredients that can be used under all varying circumstances. I know, however, that cornstarch can and will do the work of any other starch on any yarn or fabric, by varying the proportion used.

Sizing may be classified into light, medium and heavy.

Light:

35 to 50 lbs. cornstarch.
100 to 110 gallons of water.
2 to 3 lbs. tallow or oil.
3 to 5 ounces chloride of zinc.
1 gill of turpentine.
1 gill of blue.
Adds 3 to 5 per cent. weight to yarn.

Medium:

45 to 52 lbs. cornstarch.
100 gallons of water.
4 lbs. tallow or oil.
1 gill turpentine.
3 to 5 ounces chloride of zinc.
1 gill of blue.
Adds 8 to 10 per cent. weight to yarn.

Heavy:

52 to 66 lbs. cornstarch.
100 gallons of water.
3 lbs. tallow or oil.
3 ounces chloride of zinc.
2 ounces of blue.
1 gill of turpentine.
Adds 12 to 15 per cent. weight to yarn.

More starch in proportion to the water stiffens the size and coats the yarn; less starch makes it more penetrating. Too much starch in the size makes it too thick to penetrate the yarn. Thick size merely coats the yarn. It does not impart strength, and rubs off in the process of weaving.

In using cornstarch to replace other starches, slash a few beams and see if they weave satisfactorily and then increase or decrease the amount used if the result shows it necessary. When the warp is not pliable enough increase the softener in proportion to the amount of starch and water used. When too soft decrease the softening.

The following table based on practical tests shows to the manufacturer's satisfaction that cornstarch will replace any other starch for textile purposes.

TABLE FOR USING CORNSTARCH.

Use usual antiseptics, blue and softener to 100 gallons of water.

To produce uniform sizing it is absolutely necessary that the same quantity of cornstarch and other ingredients by weight be used for each mixing, and that the specific gravity, temperature and method of preparation be exactly the same. Take the temperature of the water before turning on steam and when the size is done. The size should be of a complete velvety density in each tank when done.

Size must be varied for hard or soft twist yarns. It should be thinner for hard twist than for soft twist yarn, as the latter absorbs it more readily. Penetration of the fibre by the size is necessary for good yarn.

Before the manufacture of cornstarch, other starches were used, but wherever cornstarch is used intelligently, it replaces, and justly so on merit, all other starches for industrial uses.

	Light		Medium		Heavy	
	Soft Twist	Hard Twist	Soft Twist	Hard Twist	Soft Twist	Hard Twist
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
6s to 25s	25 to 35	20 to 30	35 to 40	25 to 35	40 to 50	30 to 40
25s to 30s	25 to 40	20 to 35	25 to 45	20 to 40	30 to 50	25 to 45
30s to 40s	25 to 40	20 to 35	30 to 45	25 to 40	35 to 50	30 to 45
40s to 60s	35 to 45	30 to 40	45 to 50	40 to 45	51 to 55	45 to 50
60s to 80s	40 to 50	35 to 45	45 to 55	40 to 50	50 to 60	45 to 55
80s to 100s	50 to 60	45 to 55	55 to 65	45 to 60	60 to 70	50 to 65

The value of the exports of cotton piece goods from Great Britain in 1906 was $366,908,200, an increase over 1905 of $22,277,300.

From 1895 to 1905 the world's wool production decreased from 2,750,000 bales to 1,750,000; in the same period the world's cotton supply increased from 10,304,000 bales to 17,782,000 bales.

Of the total imports of the United States for the year ending December 31, 1906, amounting to $1,320,609,250, over $700,000,000 were from Europe, $148,000,000 from South America, $200,000,000 from Asia and Oceanica, and $12,000,000 from Africa.

THE SQUARE MOTION COMB.

BY JOHN BROWN.

(Continued from August.)

Fig. 7 shows the pressing plate and square motion faller. The carrying circle, 4 feet in diameter, has two rows of pins; the front row has 30 per inch and the back row (slightly stronger) 28 per inch.

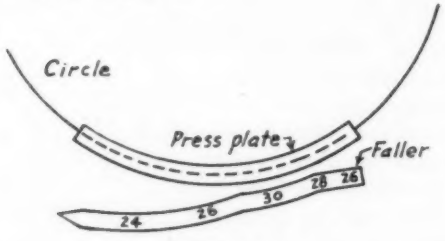


FIG. 7.

We now come to the square motion, the vital part of the machine. It will be noticed that this is not a simple curve, but two curves. The part which comes nearest to the circle and has the most important part of the work to do is of exactly the same radius as the carrying circle, and when properly set works as close as possible without actually touching the pressing plate. In working, the fallers at the front end merely pass through

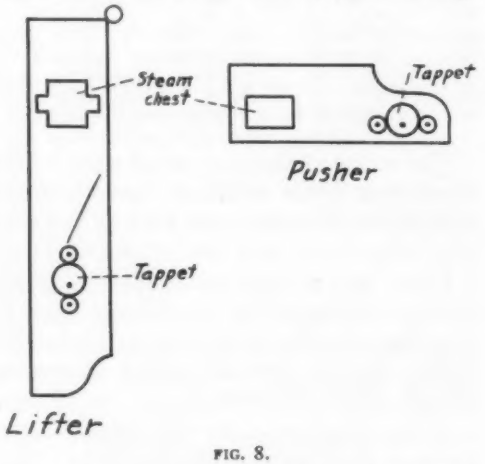
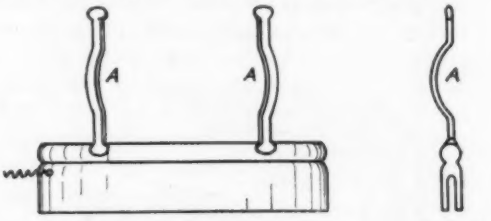


FIG. 8.

the extreme points of the fibers and as the circle revolves get nearer until at the point of contact they clear the staple close up to the circle. This is the exact imitation of the handcomber's style of combing. At this point there is a great strain both on the wool and the circle, and here the utility of the pressing plate comes in.

Connected by the arms, A, Fig. 7a, to the faller lifting bar, as the fallers rise the pressing plate descends, holding the wool firmly in the circle, traveling with it until the faller passes through. It then rises and is drawn



FRONT VIEW. FIG. 7A. SECTION.

back to its first position by a spring ready to drop and held for the next faller. In cleaning staple the fallers bring a certain amount of fiber along with the knots, etc. As the faller drops these are stripped out by clearing knives in the shape of "robbings" and have to be recarded.

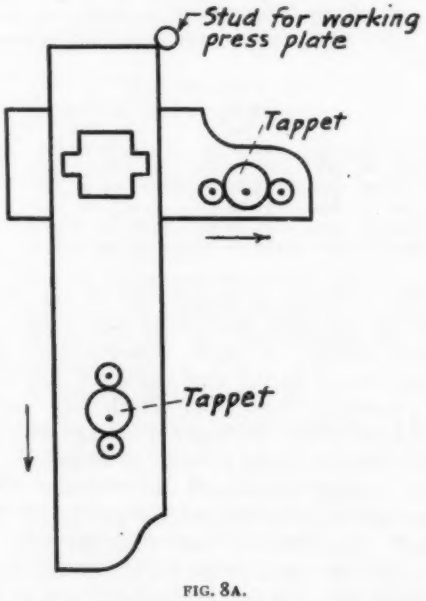


FIG. 8A.

The saddles or bearing plates on which the fallers slide horizontally are hollow and serve not only as steam chests for heating the fallers, but act as steadiers to the lifting and pushing bars which actuate the fallers.

These bars have an alternate motion, the lifter resting while the pusher moves, and vice versa.

Fig. 8 shows the lifting and pushing bars. If the position and peculiar shape of the tappets be noticed it is evident that to be properly set they must both be in the same position at the same time, as the motion of one slide is vertical and the other horizontal, Fig.

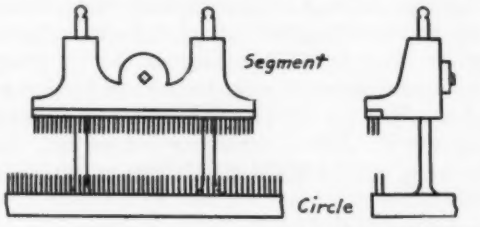


FIG. 9. FIG. 9A. SIDE VIEW

8a. As soon as the wool leaves the square motion the portion close to the circle is covered by a segment, Fig. 9, of the inverted circle, thus ensuring the perfect clearing of the staple. These segments have three rows of pins, 50 per inch, and here as soon as the segment drops, the push-up knife, F, Fig. 4,

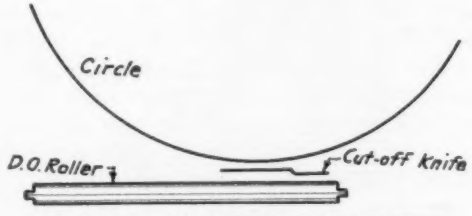


FIG. 10. SHOWING POSITION OF CUT-OFF KNIFE.

lifts the wool (which has been jammed into the bottom of the carrying circle by the pressing plate) up to the top part of the circle and into the pins of the segment. The segments each slide on two fixed pillars and are raised and lowered by an incline. As soon as the segments have been raised they continue their course along a raised circular steam chest which ensures their being always heated. Here a couple of blowpipes direct the sliver to the drawing-off rollers. The rollers are set at such an angle to the circle that the long fibers are caught first, H, Fig. 4, but they are so close to the circle at the finishing end that too many short fibers would be drawn into the sliver, causing slubs, etc., were it not for another useful contrivance, the cut-off knife.

This cut-off knife serves two purposes; its raised edge just covers the points of the segment pins, preventing any fibers being drawn off without passing through the segment pins; and also its raised lip, Fig. 10a, determines how much the rollers shall draw.

One of the most useful contrivances for forming the wool into sliver after it is drawn from the circle is the table leather, Fig. 11, bearing the sliver, which has its short fibers folded inside by means of a blowpipe and guide plate, X, Fig. 11a, while it is passing into the funnel, thence to the calender rollers and coiler. Before the noil is taken out it is either transferred to the small inverted circle where the long fibers are drawn off, or a pair of small backing rollers are fixed inside the large circle for the same purpose. The noil is then stripped and the operation is completed.

It will be patent to the most casual observer that a machine with so many and so varied motions needs accurate setting and

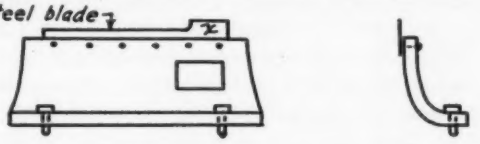


FIG. 10. FRONT VIEW. END VIEW.

careful oversight to get the best results out of it. Beginning with the feed rollers, they must deliver just enough to supply the filling heads, or there will be either slackness or a constant breaking of the sliver. The filling heads must be set so as to deliver the wool to the circle in such a way that the tuft shall be firmly put on—not too far over or there will be too much noil; if not far enough, too many loose fibers will be left outside the circle causing a ruinous amount of "robbings." The best plan is to dissect a sample of the sliver to be combed and to set the filling heads when at their nearest point the same distance from the circle as the average length of the staple. This is done by pulling a piece from the staple and holding it firmly between the thumb and finger across a board covered with velvet, beginning with the longest fibers first until they are all evenly laid

side by side. Fig. 12 shows a section of staple drawn for the average length. The filling heads are then raised or lowered by means of a rack to such a position that they will deliver in as near a straight line with the pins as possible. After the heads are once properly set and when changing from one length of fiber to another, a good rule is to

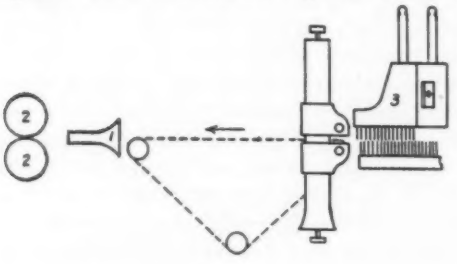


FIG. 11.

1. Funnel. 3. Segment resting on rollers.
2. Calender Rollers. Dotted lines show position of table leather.

lower the heads (by means of the rack) one-half the distance they are brought back, or vice versa.

The pressing knife must be set square over the circle and just low enough to press and hold the wool firmly while the fallers are passing through the staple. If set too high the result is too much "robbings"; if too low there is danger of breaking or cutting the fiber. The square motion fallers must be set so that at the beginning they just catch the end of the fiber and at the contact point they

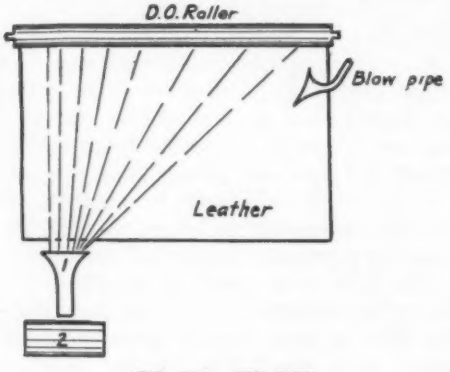


FIG. 11A. TOP VIEW.

must be as close as possible without risk of the pins catching the rim of the circle or pressing plate. To alter their position the square motion has to be moved bodily.

In setting the segments they must drop so close to the circle pins as just to allow a sheet of writing paper to pass between them. Every segment should be made to template so as to be interchangeable. The push-up plate should just clear the segment and rise high enough to put the wool well into it. The cut-off knife must also just clear and be set far enough back to allow all that is worth making into top to pass through the rollers, but not far enough to allow slubs or fribs to pass. The draw-off rollers at the finishing end must be set as near to the circle as possible. The cut-off knife regulates the drawing space. All the stripping knives and the backing rollers are set as close as possible without real contact.

Although the square motion is capable of doing a large amount of good work, yet without great care bad results may ensue. Some of the principal causes of bad work,

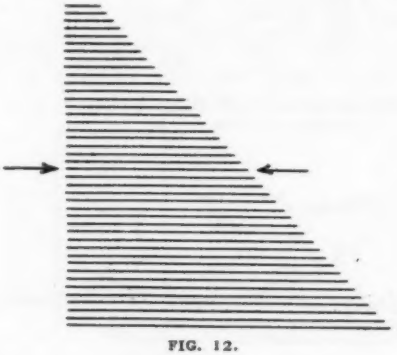


FIG. 12.

and this includes low percentage of top, are:

Sliver put into machine wrong end first. In this machine as in the "nip" the sliver must be fed in the opposite way to that in which it leaves the card.

Wool too damp causes slubs.

Bristles too long in filling heads cause lumpy noil.

Square motion not properly set causes dirty work.

Fallers not kept clean and in good set cause heavy "robbings."

Segments dirty and out of set cause heavy noil. If not set true to the circle they will cause the same result.

Push-up knife not lifting enough causes neppy top.

Bad leathers or brushes result in slubby or snarly sliver. Backing rollers not set close enough cause heavy noil.

When the machine is properly set and closely looked after it not only turns off a large amount of work, but from the same carding will produce a cleaner top than any other wool combing machine. The removal of all shorts and the fact that all the fibers lie the same way tend to make both a high class spinning top and to produce yarns suited for the finest weaves.

ENGLISH NOTES.

(By Our Special Correspondent.)

The worsted more than the woolen trade is concerned by the carelessness which loads raw wool with vegetable fibers, consequently it is Bradford that is most indignant over the ways of colonial wool packers. Their cheap jute wrappers chafe in transit and cover the walls of the bale with minute ends of jute. The packers ruthlessly cut the corners of the bale in packing and leave frayed ends to mingle with the contents. They leave thread and twine in the bale and then turn round with child-like innocence and ask why we do not carbonize the wool and get all these bits out.

That is the query with which a leading pastoralist in Australia has taken away Bradford's breath and has shown how unavailing previous protests and suggestions to use paper-lined bales have been. A proposal is afoot now which merits attention elsewhere. For the instruction of wool growers the Bradford Chamber of Commerce proposes to get up a little exhibition. Samples of wools, tops and noils will be shown and probably patterns of cloth with and without the mischievous vegetable specks. When they see how the foreign matter cross-dyes growers will perhaps appreciate the effects of their folly. The idea is to distribute specimen boxes to the several wool-growing centers, making as sure as may be that the attention of the right people is gained. Quite erroneous ideas as to the method of worsted working obtain. In Australia, for instance, the belief seems quite widespread that combing wool is mixed plentifully with shoddy. The specimens will show how clean wool has to be rendered and will help pastoralists to believe that they have something to gain in not putting manufacturers to avoidable trouble and expense.

* * *

When Lancashire cotton manufacturers (i. e. owners of looms) resolved to stop production during an extra two weeks this summer, they had the primary intention of easing the demand for yarn. Spinners have been coining money while manufacturers, so to say, have been making none, and cloths have been getting too dear for business. Profits have been very unequally divided between the two branches of the trade and it was trusted that spinners would acquiesce in a fair attempt at re-adjusting margins, which was not entirely to spinners' disadvantage.

But the latter are rather more closely allied for mutual protection than the former and it was always foreseen that spinners might elect to preserve the status quo by stopping spinning for an equal period. The generosity of the Spinners' Federation was counted on, but to the disgust of manufacturers of goods the spinners' executive proposed stoppage to the members. It has not suited a majority of members to throw a fortnight's profits away, and spindles will turn as usual. All the same the Federation has weakened the sense of community of interest between the two main branches of the industry, and sneers about the hypocrisy of the spinners' organization have been more abundant than usual.

* * *

What appears to be a remunerative business is the manufacture of imitation Swiss embroidery. This is imitated by a process in which the fabric is first punched with holes. The carding about these holes and about the edges of the pattern is simulated by printing the fabric thickly with an adhesive. Short cotton fiber is showered from above and as much as is not secured by the gelatinous composition used is brushed off mechanically. A large number of designs are

dealt with and the material is popular. From the wearer's point of view the main drawback is that the embroidery does not wash. An article on "Spotted Nets," in the Textile World Record, July, 1906, detailed other purposes for which articles similarly prepared are made.

* * *

Fabrics stenciled with designs come from Japan, but stencil decoration on a commercial scale is a novelty in England. A Bradford manufacturing firm has opened a considerable department for stenciling mohairs and other goods for furniture uses. There is a trade in cushion covers and similar small articles which is at present supplied by block-printers and might be supplied by stencilers. For curtains, hangings and the like in exclusive styles and artistic colorings, there is a market which conceivably could be expanded by those who could afford short runs. Stencils cost little, although to use them to the best effect requires some schooling. Stencilers have to be trained and it will doubtless be best to catch them young. Public designers of artistic designs prefer to engage children of 13 or 14, in whom they seek to develop taste, as well as manual skill.

The coloring medium employed is a paste or ink, which is neither a dye of the ordinary type nor a paint. A mixture is used which does not rob the fabric of its luster. The price obtainable as well as the volume of business, must depend very much on the sense one has for design and for the taste of a certain public.

* * *

Enthusiasm over Colonial cotton-growing projects has subsided to a very low ebb in industrial England and money is no longer freely forthcoming. The British Cotton Growing Association is reduced to trying shifts, and a Ginning Association, to which its main assets are transferred, has sought the favor of investors. Statesmen have not so soon let their ardor cool. Herr Dernburg for the German Colonial Administration is now in Africa, Mr. Winston Churchill, for the English Colonial office is going out—largely in the interest of cotton. So that Northern Nigeria may have a narrow railway 400 miles long, the British Government pledges its credit in a sum exceeding $6,000,000. And this, although there is cause to fear that the rates cotton traffic can afford will not be remunerative to the railway.

* * *

Jacquard weaving would appear to make little headway either in England or on the Continent. The fashionable figures are obtained on other looms and the competition from printing has to be reckoned with. For quilts, carpets, table linen, much is still done and novel designs are in good request. For designers of floral subjects France and Germany are chiefly drawn upon and artistic designers from those countries are being brought to England.

Two companies have ended their careers, which set out to reduce designs to squares by photographic means and to cut Jacquard cards by electrical connection with a design painted upon zinc. The camera, although useful in plain work, failed to do justice to niceties of light and shade. Electrical card-cutting may have had its end hastened by the extent to which prices for the work were cut by the operators of the process.

The idea of using electrical current as a guide is not dead, and the Textile Appliance Co. Ltd., of Glasgow, have a device for supplanting cards by a system of contacts with the painted design. Otherwise than as power for driving, electricity half promises to play an interesting part in textile industry. Warp-stop motions and electrolytic bleaching systems are instances in point.

* * *

Two combines in much reduced circumstances are on the point of joining hands after pruning away their dead capital. One is the British Cotton & Wool Dyers' Association, which had formerly a mercerizing works in America. The other is the Yorkshire Indigo, Scarlet & Color Dyers, Ltd. On one occasion the former achieved a dividend of 2 1/2 per cent. upon its ordinary stock. The other, after four years at 8 per cent. fell away so badly from success that the reserve fund has been tapped to keep the debenture holders from foreclosing.

Khaki for uniforms and the fashion for tweeds have been the undoing of the Indigo and Scarlet concern. Competition from outside has been the bane of the other. Both have been the victims of over-capitalization and both have heavy closed-work accounts. Their hapless case contrasts strongly with the unbroken prosperity of the Bradford Dyers' Association, which also paid very high prices for the business it acquired. The last-named dyes principally dress goods and linings, is a 7 per cent. concern, and touches a net revenue exceeding $2,000,000 a year. It owes success to firm and wise management from the very outset, to specialties and to the monopoly it has created.

Merchants get a rebate who send all their work—or all but certain agreed exceptions —to B. D. A. dye houses. The Association contracts to keep them automatically upon its best terms and to give them preferential attention. Then its position has been fortified strongly by advertising. Women demand specific B. D. A. finishes and buyers have to pay B. D. A. prices, although something not so much inferior might be had at considerably reduced prices, but without the magic name. Its position is intrinsically stronger than that of some combines, in that it finishes goods and can impress its mark upon their whole career. One cannot conveniently trade-mark semi-raw material.

Commercially the Association is strong and industrially it is as perfect an instrument as unlimited resources have been able to make it. It has agreements with the salesmen, who bring in the work, and it retains a small army of men who are in the good graces of customers. This co-operation, however, has made no special effort to tie to itself its technical men. It has not been at pains to establish a "corner" in dyeing and finishing expertitude and therein some people find the Achilles' heel of what is otherwise a very powerful and well-built organization.

* * *

Label-licking is a practice that factory inspectors condemn and that doctors see potential evil in. It has to be admitted that no disease is directly traceable to the consumption of gum, printing-ink and bronze powder involved in licking 4-5,000 labels daily as do some girls in the spooled thread mills. They lick labels for quickness and get through 20 or 30 per cent. more work than those who use mechanical dampers. But the act is disgusting and men in the cloth pattern rooms decline to use their tongues for this purpose. They acquire dexterity with the gum-brush and the dry adhesive on the gummed label is made of a quality which requires fresh gum to attach the label to cloth. Either the introduction of a machine or the supplying of labels with no gum might effectually end the licking habit.

* * *

Numbering machines for cloth pattern tickets, closely resembling office dating-stamps, are in common use in England. It is pointed out by users that there is difficulty in centering the impression neatly on the ticket. And the want is felt of a neat hand-contrivance that will deliver and attach the ticket and stamp it accurately at a single operation.

Neatness in pattern-work is cultivated more by merchants than by manufacturers on this side. Yet salesmen of all kinds become more fastidious about the appearance of their patterns. They look for a perfect system of re-dressing shade patterns on cards, so that colors sold out may be removed from the range without injury to the general appearance of the remainder. One solution is to mount each pattern upon thin card to which a strip is fastened behind. The two ends of the strip pass through slits in the main card or folding book and the patterns may be withdrawn and the rest rearranged in close order leaving no unsightly gaps. It is of course disadvantageous to show some buyers patterns you cannot sell and equally so to present a range of choice that is evidently the dregs of the original selection.

Preceding 1896 the United States never exported $15,000,000 worth of cotton manufactures in any one year; in 1906 they amounted to $42,961,431.

COMBED SHORT COTTON AND CARDED LONG COTTON.

BY. J. T. B.

The question of combing short cotton is being considered so much by mill men at the present time that a few words on the subject may be appropriate.

With the introduction of such machines as the Alsatian, Montfort, Nasmith, and the new Whiting combing machinery, it is a question in many mills whether they can by combing shorter cotton make yarn that will equal that now made with only a carding process from longer and therefore more expensive cotton.

Without going into a detailed explanation of the mechanical operation of carding and combing, we will briefly compare the principles involved. It has often been repeated by practical men that we should consider combing simply as good carding. Although the machines have several objects in common, there is considerable difference in attaining them. Both the card and comber are fed by a lap or sheet of cotton, and both convert it into a strand or sliver. Again, both machines are intended to remove short fibres and impurities, while no other process assists in the reduction of the stock so much as these. It is in the extraction of the short fibres and impurities, however, where the principles of the two machines are involved, and where the combing process excels. In making this statement the writer is well aware that many good carders claim that the card will ultimately be perfected to the extent that combers will not be necessary, but they are undoubtedly looking well into the future. Carding machines of modern construction may be working under the most favorable conditions and doing the best possible, yet the stock can be taken from these machines and passed through a comhing process with beneficial results.

It is well known that the card depends practically upon centrifugal force for the combing of the fibres between the cylinder, doffer, and flats, also that the action is more or less of a reciprocal nature. Although short fibres may have been taken by the flats, it is quite possible in many cases for them to be retaken by the cylinder and passed along into the finished product. On the other hand, the positive combing action of the comber needles, and the manner in which they dispose of the short fibres, make it impossible for these fibres to be retaken by the cylinder when once they have left it.

The card can remove foreign matter and short fibre, but the short fibres are not removed by so positive a method as on the comber, and as a result many of them find their way into the yarn. It is also possible for a limited amount of long fibre to be taken by the card, while this can be guarded against on the comber. The conclusion is that a combed sliver is composed of fibres of a more uniform length than a carded sliver; although both may be equally free from leaf, seed and other foreign matter.

Keeping the above in mind and also remembering that better yarn is made when the fibres are uniform than when there is a large percentage of short fibre present, we realize that from the same lot of cotton, all other things being equal, a better yarn can be made if the stock is combed. In addition to an improvement in quality we also find that yarns much softer and finer can be made, on account of the combed fibres drawing more evenly than would be the case where there is considerable variation in length, and also from the fact that the uniform fibres are incorporated into the yarn better by the twist. Thus the yarn is smoother and not so fluffy, because there are very few short fibres flying loose on the surface of the yarn. The cost of making combed yarn is of course higher than for carded yarn, but the price paid for combed yarn is also higher than for carded yarn of same counts and put up in same form.

If, as pointed out in the foregoing remarks, we can make a finer and better yarn from the same cotton when combing is resorted to, it follows that an equal quality of yarn could be obtained from a slightly lower class of cotton; but this holds good only to a limited extent, because while we may have a uniform length of fibre in a shorter cotton, the fibre itself will not be either long enough or fine enough to produce good yarn of either the medium or fine counts.

For instance, in a mill making a 60s yarn from 1 1/4 inch carded peeler cotton, it would be quite possible to obtain an equal quality and count from a good quality of gulf cotton of a slightly shorter staple, providing the latter was combed. We could not expect, however, to obtain similar results from upland cotton of, say, one inch staple; even if it could be combed carefully enough to extract a good percentage of the shorter fibres, the remaining fibres would be too short to withstand the attenuation necessary to make a good 60s yarn.

Before the introduction of the new combing machines built specially for short cotton, it was entirely too expensive to comb cotton of short staple because the yarns produced were not fine enough to command a profitable price. Again the operation of combing was considerably higher in cost at that time owing to the low production obtainable.

Another point of merit generally claimed for combed yarns is that a certain amount of lustre seems to be imparted to the yarn either from the uniformity or parallelism of the fibres, both of which are very desirable properties, especially in high grade yarns for thread, lace, hosiery, etc.

Figures compiled by the Bureau of Statistics show that the total value of the raw cotton exported in the calendar year 1906 was 413 million dollars.

AN IMPROVED WOOLEN CARD.

A novel arrangement of workers and strippers on a woolen card, invented in England, is the subject of a recent patent in this country. Fig. 1 is a sectional view of the card with the workers and strippers arranged by the new method; Fig. 2 is an enlarged view of the workers and two of the strippers. It is claimed that with the new arrangement the stock is more thoroughly carded, the amount of waste is reduced, and there is less need for grinding.

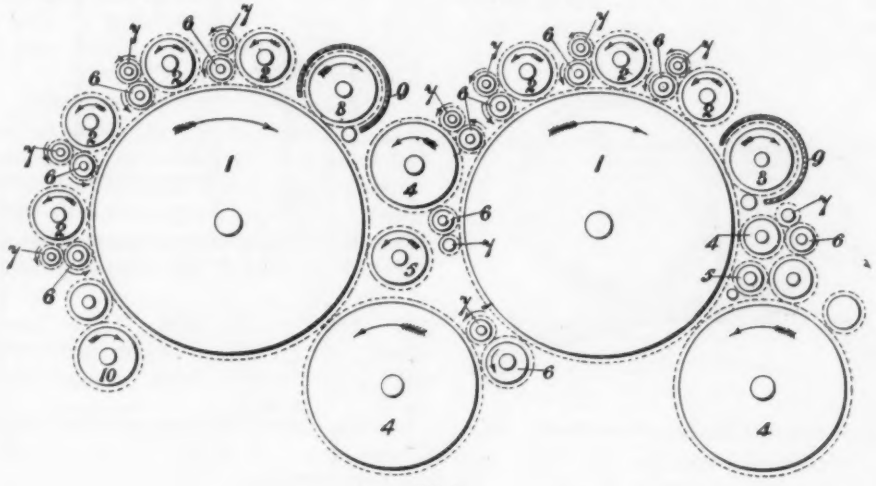


FIG. 1.

In combination with each cylinder, 1, are employed a series of workers, 2—2, a fancy, 3, two doffers, 4—4, and between the latter a cleaner, 5, which also acts to a certain extent as a fancy roller inasmuch as it raises the stock or fibre remaining on the cylinder, 1. In combination with each worker, 2, is a stripper, 6, disposed in the angle formed between the worker, 2, and the cylinder. On the side shown and in the angle formed by the worker, 2, and stripper, 6, is a small cleaner, 7, and the doffers, 4—4, are also provided with strippers, 6, and cleaners, 7.

The fancy rollers, 3, are preferably incased in a shell, 9, which prevents the fibre being thrown out of the machine.

At 10 is the licker-in and the direction of motion of the several rollers or cylinders, and the fibre under operation, is indicated by the arrows in Fig. 2. Except as regards

the arrangement and combination of the several workers, strippers, cleaners, fancies, and doffers, in relation to the cylinder the machine is constructed in the ordinary manner.

The relative surface speed of the several rollers or cylinders may be varied, but satisfactory results are obtained when the cylinder, 1, makes 100 revolutions per minute; the worker, 2, makes 10; and the stripper, 6, and the cleaner, 7, make 15.

The inclination of the teeth of the card clothing covering the several rollers is shown in Fig. 2. The fibre is carried by the cylinder 1, to the worker, 2, which, traveling at a slower speed, retains the fibre or a portion of it and carries it to the cleaner, 7. This cleaner removes the fibre and deposits it on the stripper, 6, which also removes any fibre left on the worker, 2; the fibre is then taken by the cylinder, 1. In this way the fibre is cleaned and straightened by the joint action of the cylinder, 1, and the worker, 2, again by the cleaner, 7, and stripper, 6, and again by the joint action of the stripper, 6, and cylinder, 1.

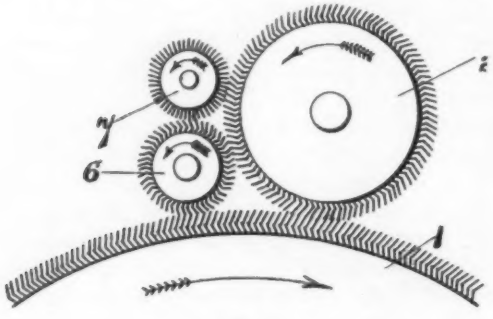


FIG. 2.

It will of course be understood that a portion only of the fibre under operation is manipulated by the several series of rollers or cylinders, a dressed portion being carried forward by the cylinder to the doffer as usual.

The stripper, 6, removes any fibre left on the worker, 2, by the cleaner, 7, and also keeps the points of the card teeth on the worker, 2, in good condition.

Massachusetts in 1906 had 8,904,725 cotton spindles, or 34.5 per cent. of the total for the country.

TESTS OF A NEW METHOD OF WEIGHTING SILK.

(From Mittheilungen ueber Textil-Industrie.)

We have already published in "Mittheilungen" results of the first public tests of a new process of weighting silk, made in the Milan Conditioning House. The objects of the new process are to avoid the so-called red spots and increase the resistance of the silk to the influences of the weather, sunlight and perspiration. The inventor, Prof. Gianoli, has introduced the process successfully into several dyehouses, including Gillet & Fils, Como; Vulliod, Ancel & Co., Lyon; Clavel & Lindenmayer, Basel, and C. A. Koettgen, Krefeld.

Prof. Gianoli is not yet prepared to pass final judgment on the value of the process, but there is every indication that it marks an important step in the solution of many of the difficult problems connected with weighting silk. The Milan "Bolletino di Sericoltura" recently published the following report of the tests:

1. Influence of light. These tests were made with a skein of organzine weighted to 20.8 ounces and exposed to the sunlight for 10 days in April:

	Strength.	Elasticity.
Unweighted . .	770 grains.	50 inches.
Weighted, Old Method,	662 "	22 "
" New "	970 "	53 "

A yellow organzine weighted to 20.8 ounces and exposed 10 days to the light:

TESTS OF DYED SILK.

	Strength. Old Method.	New Method.
Red	462 grains.	1155 grains.
Yellow . . .	678 "	1124 "
Green . . .	570 "	1032 "
Blue . . .	739 "	939 "
	Elasticity.	
	Old Method.	**New Method.**
Red	8 inches.	49 inches.
Yellow . . .	17 "	54 "
Green . . .	11 "	49 "
Blue . . .	20 "	46 "

The silk weighted by the old method showed a decrease in strength of 40.2 per cent.; in elasticity, of 69.5 per cent.

2. Influence of temperature. Organzine weighted to 16 ounces. Exposed for 3 hours to a temperature of 275° F.

	Elasticity.
Old Method	32 inches
New "	54 "

3. Tests of cloth. Several sections of organzine and tram were weighted to 20.8 ounces, one-half by the old method and the other half by the new or Milan process. The two parts were then woven separately into taffeta, which was exposed to the air and light during December, January and February. Strips of the cloth, each 7.9 inches long and 3.9 inches wide, were then tested for strength with the following results:

OLD METHOD		NEW METHOD	
Strength.	Elasticity.	Strength.	Elasticity.
35 lbs.	.12 inch.	78 lbs.	.60 inch.
34 "	.16 "	75 "	.52 "
35 "	.12 "	67 "	.40 "
33 "	.12 "	106 "	1.00 "
30 "	.12 "	96 "	.84 "
35 "	.08 "	97 "	.80 "
Average 33⅓ lbs.	.12 inch.	86½ lbs.	.69 inch.

This shows that the cloth weighted by the Milan method has twice the strength of that weighted by the old process.

There is a total area of 18,166 acres under cotton in the West Indies, of which 14,566 acres are in Sea Island cotton.

PLAN FOR A WOOLEN YARN MILL.

BY CHARLES HERITAGE.

The accompanying illustrations show the plan and arrangement of the machinery for an 8-set woolen yarn mill. Fig. 1 shows the ground floor plan in which A is the wool room, 54 by 40 feet; a^1, bins for sorted wool; a^2, the elevator; a^3, stairs for the picker room; B, is the wool sorting room; b^2, wool

FIG. 1.

sorting board; C is the drug room, 50 by 13 feet; c^1, the dyer's office; D is the dye house, 45 by 30 feet; d^1, the scouring box; d^2, the rinse box; d^3, extractor; d^4, dye tubs; L and M are the machine shop and engine room, 40 by 36 feet; l^1, the work bench; l^2, the lathe; l^3, drill; l^4, the circular saw; m^1, the engine; m^2, the dynamo; m^3, main shafting to be continued into wool room and card room; N is the boiler house, 40 by 14 feet; n^1, boiler; n^2, steam pump; n^3, hot water heater; I is the card room, 110 by 64 feet; i^1, pipe to deliver stock to the bins; i^2, wool bins for cards; i^3, first breakers with Bramwell feeds; i^4, second breakers with lap spool stands; i^5, finishers with Apperley feeds; i^6, roping racks; i^7, card grinder; i^8, card waste duster; i^9, work bench; i^{10}, overseer's desk;

i^{11}, posts, eleven feet apart; O is the main entrance, 18 by 14 feet; o^1, the stairs; o^2, the elevator.

In the second story, Fig. 2, G is the picker room, 54 by 40 feet; g^1, the elevator; g^2, wool for burr picker; g^3, burr picker; g^4, gauze room for burr picker; g^5, stock for mixing picker; g^6, mixing picker; g^7, blower to blow stock to picked stock room; g^8, gauze room for mixing picker; g^9 and g^{10}, stairs; H is the picked stock room, 40 by 36, feet; h^1, wool bins for the picked stock; h^2, the blower; h^3, pipe carrying stock to the card room and passing through the floor to wool bins in the card room; J is the No. 1 spinning room, 110 by 64 feet; j^1, the mules; j^2, overseer's desk; j^3, work bench; j^4, yarn bins; j^5, posts; P is the doorway, elevator and stairs.

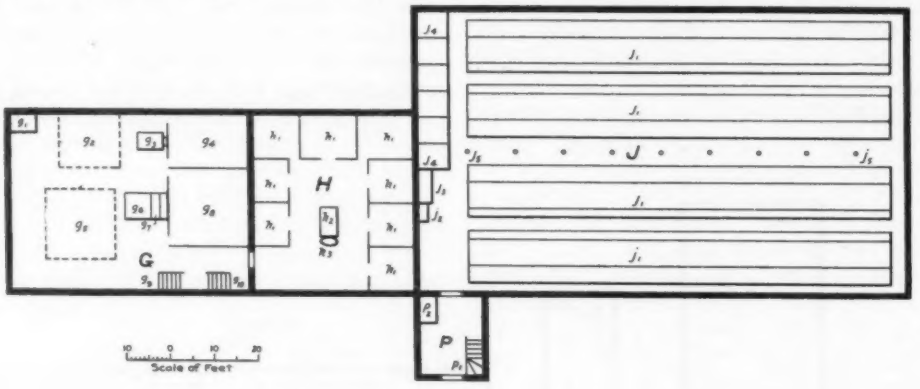


FIG. 2.

Fig. 3 shows the third story in which F is the colored stock room, 54 by 40 feet; f^1, the elevator; f^2, stairway; E is the stock dry room, 40 by 36 feet; e^1, the stock dryers; K is the No. 2 spinning room, 110 by 64 feet; k^1, the mules; k^2, work bench; k^3, yarn bins; k^4, posts; Q is the doorway, elevator and stairs.

Fig. 4 is the front view of the mill showing the tower and roof. The water tank should be in the tower to supply the sprinklers throughout the mill. The dimensions of the main mill are 110 by 64 feet and 90 by 40 feet and 55 feet high. The windows are 10 by 8 feet; the doors in the tower are 8 by 6 feet.

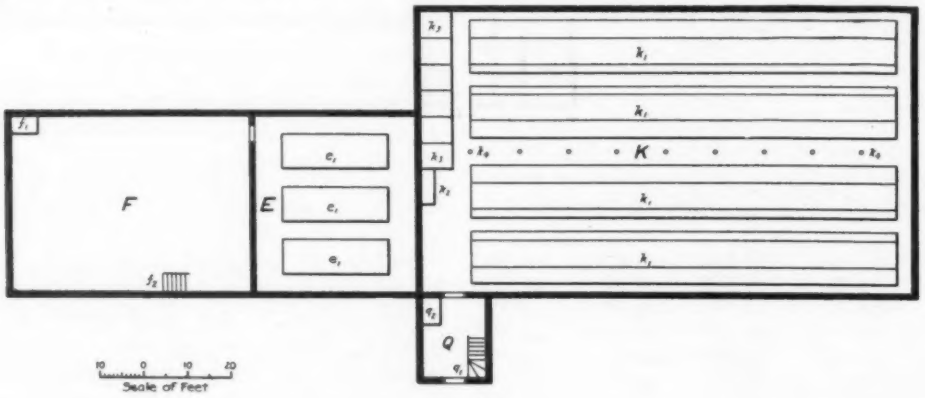


FIG. 3.

The estimated cost of the machinery for equipping such a plant would be as follows:

1 wool scouring and rinse box,	$200.00
4 dye tubs complete,	400.00

1 steam driven extractor,	675.00
3 wool dryers, each 20 feet long,	400.00
1 burr picker with Bramwell feed,	940.00
1 60-inch mixing picker with feed,	650.00
1 blower to blow wool from mixing picker to wool bins,	50.00
1 blower to blow wool to card room,	50.00
1 Stillman improved waste duster,	190.00
8 sets of 48 by 60-inch double process cards. The first and second breakers to have 10 workers and 5 strippers on each card; finishers to have 8 workers and 4 strippers each; finishers to have 18-inch doffers. These cards can be run very fast, as the stock is well carded before it comes to the finisher, by having 28 workers to one set of cards; finisher doffers can run 13 to 15 turns per minute, and will produce 10,000 pounds of yarn per week on a basis of 3 1/2 run. Cards to be clothed with steel wire, $2,900 each,	23,200.00
8 waste end conveyors at $40 each,	320.00
1 48-inch card grinder,	270.00
1 48-inch cylinder card grinder,	117.90
8 mules 2 1/8-inch gauge, 540 spindles, 8-inch bobbin, at $1,350 each,	10,800.00
1 steam boiler to be made of steel, 17 feet, 4 inches long, 72 inches diameter, to carry 125 pounds of steam. This boiler is in accordance with the requirements of the Hartford Steam Boiler Insurance Co., and will be insured by them for 125 pounds working pressure,	925.00
1 Brown steam engine, 100 h. p.,	2,400.00
1 lathe,	500.00
1 drill,	350.00
1 circular saw,	125.00
	$42,562.90

FIG. 4.

CORRECTION.

In the article on Warper Production in our August issue, there was an error in the solution of the example illustrating the rule for finding the size of shaft pulley for a given speed of warper pulley. The rule and example should have been stated as follows:

To find size of shaft pulley for given speed of warper pulley.

Rule: Take speed of rotation of warper pulley, multiply it by 10 (since warper pulley is 10 inches in diameter) and divide product by speed of shaft.

Example:

Suppose shaft rotates 200 times per minute.

Suppose speed of warper pulley is 231.09 as in above example; what is size of pulley needed on shaft?

$231.09 \times 10 = 2310.9 \div 200 = 11.5+$ Answer.

Pulley on shaft should be 11.5+ inches in diameter. (Should never be less than 6 inches.)

Warper pulleys are always 10 inches in diameter.

Outer pulleys 2 inches wide each.

Center pulley 1 1/8 inches wide.

Three-sixteenths inches allowed for cracks between pulleys.

BELT TENSION.

BY MARTIN COLE.

The cost of belting is an important item among mill accessories. The same belt may last for five or twenty years according to the treatment it receives. In all cases it is desirable to have belts run as slack as efficient driving will permit and wherever it is possible the pull of the belt should be on the lower side of the pulleys, as the belt then gets a better contact with the pulleys. This will greatly increase the life of the belt.

It is well known that a new belt soon requires to be tightened, as it stretches during the first few days of its working, and so it is often put on as tight as a fiddle string. This extraordinary tightness not only strains the belt and takes a few years' wear out of its life, but it may take 25 per cent. more power to drive than it would if it had been put on only moderately tight. It is far better to go to the trouble of tightening the belt than to waste belting and power with overtight belts.

Belts should not be stretched with pulley blocks. I remember where it was desired to run 48-flyer spinning frames faster and 10-inch pulleys were put on instead of 11-inch. This overloaded the engine so that it could not run at full speed and the spindles ran slower than before. Pending alterations in the engine it was resolved to put the 11-inch pulleys back. The belts had been shortened 1 1/2 inches to make them right for the 10-inch pulleys. This should have been put back again when the 11-inch pulleys were put on, but the man finding it was possible to get the belts on the drum did so. All the belts were too tight and the engine was able to run only at three-quarter speed. The belts were lengthened 1 1/2 inches and the engine ran full speed again.

A single belt is often put on too tight and because it does not lessen the speed of the engine it is allowed to run, wasting power on increased journal friction and straining the belt. Sometimes belts slip and are tightened, because they are not kept in a pliable condition, so that they will bend to the pulley face. Belts should be regularly cleaned and slightly greased with a mixture of half tallow and half castor oil, once every two weeks; mineral oils should not be used. Belts should be greased on the outside; too much grease on the inside of the belt may cause it to slip. Any slip over 2 per cent. causes damage to the belt.

A belt should be equal to its work. It is impossible to make a 2 1/2-inch belt do the work of a 4-inch belt without waste of power and belting. It is always desirable to have a belt a reasonable length, as the weight of the belt obviates the necessity of having it too tight. Where convenient large sized drums and pulleys should be used, as the higher the speed of the belt the easier it will do its work. A ring spinning frame of 400 spindles, running at 8,500 r. p. m., should not have pulleys of less than 14 inches in diameter.

A 1-inch belt running at 500 feet per minute will drive one indicated horse power without undue tension. Double belts transmit about 1 1/2 times as much power as single belts, owing to their extra weight and strength, but should never be used on a small pulley as they are not pliable enough. In dusty places, belts slip and tightening them only puts more tension on the bearings. In such cases it is best to put another single belt on the top of the first, even three or four belts may be worked on the top of each other. I recently saw a main driving double belt that was slipping owing to an increase of the load. Tightening the belt did no good. I had an additional belt put on and this drove the machinery all right until a larger drum and a higher belt speed could be provided. Allowance must be made for shrinkage of cotton belt in damp weather. We recently put four cotton belts on spinning frames one Saturday afternoon. The belts, which were not very tight, went over guide pulleys. The air was damp from Saturday night to Monday morning, when it was noticed that the frames had been lifted 1 1/2 inches from the floor.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Living Conditions in Germany.

Editor Textile World Record:

I would like you to publish a translation of the three extracts from German newspapers, which were quoted in your reply to S. N. D. North's letter on tariff revision and the German agreement. Everett (923).

We expected many would find it difficult to believe that the working people of Germany had been reduced to the living conditions disclosed by these extracts. This opinion was confirmed by the following remark of an old friend, who had read a brief report of the conditions without having seen the German extracts:

"I read your statement that the German mill help were working for 43 cents a day and living on horses, cats and dogs, but that sounds rather fishy."

He was convinced, however, when he saw the photographic reproductions from the German papers. We inserted them in the original form that there might be no doubt of the authenticity of the evidence. The first item from the "Annaberger Wochenblatt," is as follows:

"Chemnitz. The consumption of dog and horse flesh here is increasing very rapidly. During the past year the number of animals of all kinds slaughtered was 1,685 less than for the previous year. While in the past year the total number decreased 1,685, the number of dogs and horses increased 87 and 88 respectively, the total slaughtered for the past year being 1,070 horses and 698 dogs."

The next item from the "Leipziger Nachrichten" of February 13 is as follows:

"A Dog Slaughter House Discovered in Cassel. (Private advices.) A gentleman who had lost a valuable hunting dog was informed that his dog might be found in the possession of a man who lived on the 'Graben.' In company with several police officers the owner of the stolen dog went to the house to which he had been directed and made a rather surprising discovery. Fourteen persons were crowded in two narrow rooms; in one of the rooms was a freshly slaughtered and skinned hunting dog. Numerous other skins indicated that a number of other dogs had met the same fate. Apparently the occupants of the house had been carrying on a regular business of slaughtering dogs. The police arrested four persons. They are still searching for the lost dog."

The third exhibit is a somewhat detailed advertisement of a Chemnitz butcher, from which we translate the following extracts:

"You ask is horse flesh a nourishing food, is it healthful and really nutritious? How does it compare with the flesh of other animals? You have the astonishing reply: Horse flesh excels all others in nutritive value, being superior to the best beef, lamb, veal or pork."

(Here comes a diagram showing the relative values of the different kinds of meat according to an analysis by a Prof. Koenig, the result being as follows: Horse, 21.71 per cent.; beef, 16.75 to 20.96 per cent.; veal, 18.88 to 19.86 per cent.; lamb, 16.62 to 17.11 per cent.; pork, 14.54 to 20.25 per cent.)

"Horse flesh is the best and most nutritious and therefore the cheapest meat. The constantly increasing consumption, which in Germany during the last six months amounted to 100,000 horses as compared with 82,000 in the previous six months, shows plainly that the wholly unfounded prejudice is being dispelled. We deal in the best horse flesh. Really young, clean and of prime quality. The best that can be offered."

Measuring Cuts on a Sectional Warper.

Editor Textile World Record:

Where can I purchase an attachment for a sectional warper so that I can measure the length of each cut? Sunflower (914).

Our correspondent is of course familiar with the clock attachment which indicates the number of turns of the reel. This is accurate so far as the number of turns are concerned, but, as the length of the yarn increases with each revolution of the reel owing to the gradually increasing diameter, it cannot indicate the length of the cuts. To overcome this defect a separate measuring attachment is sometimes used. The yarn is run over a drum on the shaft of which it attached a worm gear connected with the dial. The latter is marked so as to indicate by means of a pointer the length of the yarn that passes over the drum. One objection to this device is the slipping of the yarn, which can be remedied in great measure by increasing the diameter of the drum.

Price of Cotton Waste Yarn.

Editor Textile World Record:

What are the average quotations on cotton waste yarn? Dorset (906).

E. S. Hyde & Co., Philadelphia, advises us that this yarn is used largely on cones and sells at 13 cents for No. 5. There is also a demand for skeins in 2-ply of the same number, the price being about 15 cents a pound. The yarn is used for fleeced underwear in 5s and 6s.

Nets for Indigo Vats.

Editor Textile World Record:

The nets I use in my indigo vats last only about six weeks, whereas they used to last from four to six months. I am using the same process as formerly. Can you tell me what is the trouble?
Hermann (911).

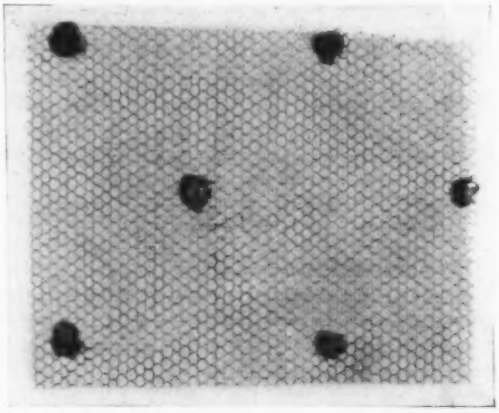
A dyer to whom we submitted this inquiry regarding the wearing of the nets asked why the mill did not use James Hunter's dyeing machine, which dispenses with the use of nets. This machine was described in the September, 1905, issue of the Textile World Record and we would advise our correspondent to apply to the James Hunter Machine Company for further particulars.

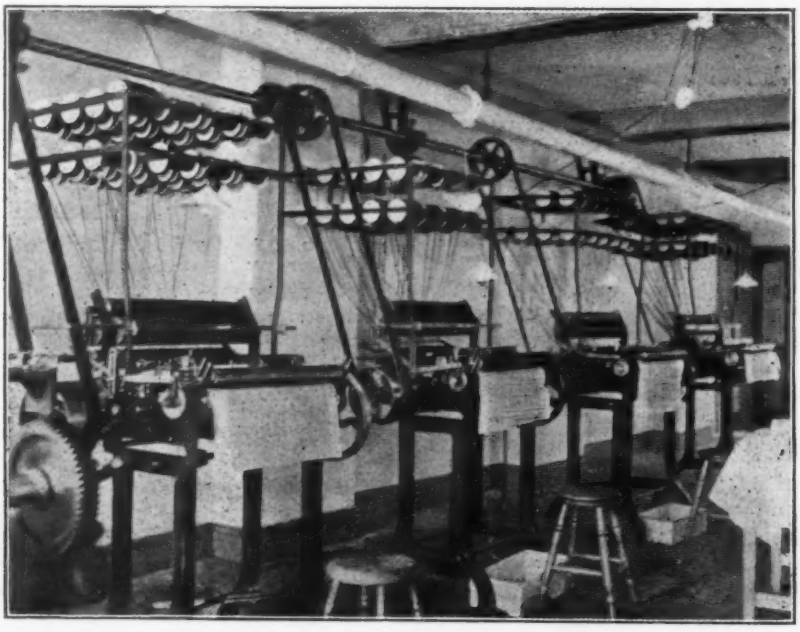
Chenille Spotting.

Editor Textile World Record:

How are the chenille spots formed upon material for veils like the sample enclosed?
Merton (904).

In France, where spotted veilings are principally produced, the spots are added by hand at a cost of some eight cents per thousand. In Nottingham (England) machines are at work which spot tulles, chiffons, crepes de chine, Japanese silks and the





MACHINES FOR SPOTTING VEILINGS.

like more quickly and cheaply. The improved machine has a Jacquard attachment controlling the placing of the spots and a positive action for advancing the material the required distance between rows. The chenille, threaded on wire, is carried on bobbins and this is fed automatically to the fabric and cut to lengths. A looper bar forms the loops or staples and a ram forces the wire through the fabric and clenches the legs of the staple back of the netting.

The machines for a 20-inch width occupy the space of a couple of sewing machines and make from 2,000,000 to 4,000,000 spots a week, according as the spots are far apart or near. The calculated cost of working by machine is one cent per 4,000 spots. The apparatus is not sold by machinists. It is in the hands of a Nottingham house, L. O. Trivett, Ld., who are inventors of the mechanism and holders of the patents.

Robert Regent.

Percentage of Gain in Bleaching.

Editor Textile World Record:

What percentage of gain in length should there be in bleaching 39-inch, 64 by 112 goods, 4 yards per pound finished, 36 inches wide? About how many yards of gain should there be in 2,000 yards of the grey goods? Fletcher (879).

I should say from 2 1/2 to 4 per cent., although in some classes of goods the gain is more than in others, according to the construction. The average given does not include the remnants and waste. For the gain, including these items, I should say from 4 to 6 per cent. The total gain on 2,000 yards, according to this estimate, would be about 120 yards.

It might be well to mention that after the goods are finished the counts would be changed on account of the gain in length and the shrinkage in width. The construction or rather the counts of the goods in question, would probably read after being finished to 36 inches, something like this: 36 inches wide, 68 by 108, weight according to finish required.

I have always found that goods woven very close on the loom give a better average gain than those that are more open. For instance, the other day I put in process a sample of 9-ounce duck, 36 inches wide, 112 yards in the grey, to finish 33 inches. I watched the sample all through the process and when put on the table in the finishing room it measured 120 yards, a gain of 8 yards. I have always found this to be the case with our best goods, such as cambrics, long cloths, etc., which show a better percentage of gain than the lower grade goods.

I have found a reliable method for working out the gain on finished cotton goods to be as follows: On good grades the gain in length can be figured from the shrinkage in width. Take a piece woven 40 inches wide, 120 yards long, to finish 37 inches. The shrinkage in width is 3 inches; the length is 120 yards: take half the shrinkage and work out the gain as follows: 120 × 3 = 360 (inches), ÷ 2 = 180 (inches), or a gain of 5 yards on the piece. This is the net gain. The actual gain would be obtained without waste and remnants would increase the gain from 1 to 2 per cent. I always allow this percentage for waste and remnants and find it gives a very close calculation.

On the lower grades the gain does not average so high. There are several reasons for this. The fabric is not being jammed up so tight in the loom, less tension is required in process, and the width is more easily retained.

I have used this method for fifteen years and always found it reliable. Delco.

Soap in Wool Oiling Solutions.

Editor Textile World Record:

Is it customary to make an emulsion from soap for use on wool in the carding and spinning process instead of using an emulsion made from lard or similar oils? The advantage appears to be in the fact that those who use it avoid the necessity of using soap in scouring the goods, as they merely add soda and hot water in the fulling and scouring processes. Duluth (907).

Some carders use soap in wool emulsions, but I think it is a bad practice. It is true that the cloth can be scoured more easily with less soap, but it is much better to use the soap in the finishing room. If it is used in the emulsion it causes a great deal of bad work; it makes the stock gummy, causing a great deal of dirt to remain in the card, which must be stripped oftener. Again the work will not be so even. This can be easily seen by watching the doffer rings and weighing the top and bottom spools separately. I have done this with the first pair of spools after stripping the finisher and again just before stripping the second time, and found that the bottom spool was a half run heavier than the top spool, this being caused by the doffer rings being filled with dirt and soap. Some carders use soap to prevent trouble with electricity; but this can be overcome much better in other ways.

In many cases where soap is used it will be found that the emulsion is mixed in a barrel which is piped for steam. The carder will put in so much oil, so much soap, so much water, and any other ingredient he thinks necessary, turn on the steam, let it boil until all is dissolved, then take it from the barrel and put it on the wool boiling hot. This method is all wrong. Steam should never be used

in this way to mix an emulsion. One reason is that more or less condensed water comes from the pipes, which makes it uncertain how much water there is in the barrel. Furthermore where oil is used the emulsion should never be put on the wool at a temperature above 80° F.; if used at this temperature there is no trouble in getting the goods clean. A. B. H.

The use of soap emulsion in mixing wool no doubt has its advantages and disadvantages; it will mix all right when it is warm, but after being on the wool long enough to get chilled it will not go into the card so evenly as an oil emulsion. If a soapy mixture is used constantly it will make the wire on the cards very sticky, resembling a light rust, which will make the carding of the stock a very difficult matter, as the stock will not enter the wire at the point as it should. It will stick to the wire and the card cannot be cleaned as well. Instead of being smooth, straight and silky, the roving will be rough and ugly in appearance.

A good solution may be made in the following manner:

Dissolve about a handful of pulverized borax in a bucket of hot water, stirring until it is thoroughly dissolved. Heat, but not boil, one-third part of red oil and two-thirds of neutral oil, mixing together thoroughly; add the necessary amount of water, then the borax water previously prepared, stirring until thoroughly mixed. This should make a barrel of emulsion if the borax is good.

Red oil is difficult to mix with any other oils; it is also soapy and will make the card wire very rough and sticky if it is not mixed thoroughly. Lard oil is very heavy and hard to wash out of the goods; it is also very expensive. I use a very good oil from which I make an emulsion of three parts of the oil to five parts of water. The oil and water are both heated, but not boiled; then in a bucket of the water is dissolved a handful of pulverized borax, which is added to the mixture of oil and water, stirring constantly until thoroughly mixed. This emulsion makes a good silky roving and keeps the wire clean and smooth, and easy to strip if the stock is well cleaned of grease before going to the picker room. The amount of emulsion required varies with different grades of stock. I have used from 2 1/2 to 4 gallons to the hundred pounds, but it depends largely on the condition of the stock before blending.

No soapy emulsion is good for indigo wools as it sets the indigo dirt if it is not thoroughly washed out after being taken from the vats and in carding is likely to make rough and tender roving. The dirt is also very hard to wash out and there is danger of streaky cloth. G. L. P.

Epsom Salts in Dyeing.

Editor Textile World Record:

What are Epsom salts used for other than to set the dye? Duluth (895).

Epsom salts, or sulphate of magnesia, is used chiefly as a weighting material for cotton goods and finds but little use elsewhere in the textile industry. As a matter of fact its ability to set a dye of any kind is very poor and colors, especially vegetable coloring matters, when treated with Epsom salts, will not offer much resistance to washing. Beta-Naphthol.

The Work of Hydro-Extractors.

Editor Textile World Record:

How much water should be left in wool and woolen goods after extracting? Sedal (893).

It would be difficult to give an answer that would apply to all classes of woolen goods. It is well known that wools attract or repel moisture in different degrees and this difference is a matter of concern to dyers, as it is sometimes the cause of streaky goods in piece dyes where the different grades of wool have not been properly blended in the preparatory processes. All woolen goods would not contain just the same amount of water before and after extracting, because all wools not being the same, the different twist and counts of yarns, the different weaves and weights of fabrics, also the amount of oils used in carding might have some effect in modifying the result obtained. The finish, also, might make some difference, as some woolen goods are waterproof to a certain extent.

From a test made specially to answer this question I obtained the following result with raw wool.

Weight dry	100 lbs.
Weight after boiling and before extracting	180 lbs.
Weight after extracting	133 lbs.
Weight after drying	95 lbs.

The wool was given a good ordinary extracting and dried for three hours in a closed drier at 150° F. It will be seen that there were evaporated 33 pounds of water and that the wool lost 5 pounds additional of its natural moisture, which it would probably regain after a time.

It would be difficult to say just how much water should be left in goods after extracting. Some extractors do better work than others and all operators do not give the goods the same time in the extractor, and as a result the drier would have more water to evaporate at one time than another, and last, but not least, all driers do not have the same degree of efficiency so a test of this kind would be likely to give varying results under different conditions. Baumwolle.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

The primary market for knit underwear is very quiet, as is to be expected at this season of the year. Some few duplicate orders are being received, and while many of them are being turned down, some are being accepted under the condition that they are for late delivery.

An increased demand is being felt for ladies' 25-cent ribbed goods, which indicates that some of the buyers who bought sparingly of this class of goods, early in the season, have been obliged to make further purchases and so far as we can learn, the "gentlemen's agreement" price of $2.05 for 6-pound goods, is being maintained. Buyers are taking the seconds at $1.90, as fast as they are offered. There will probably be only about one-third of the quantity of this class of goods made, as was made three years ago. And although these same mills are running full, they have gone into other lines, such as 50-cent combed goods, and also union suits, the demand for which continues to increase.

It is still possible to procure some lines of men's standard weight fleeced goods at $3.87 1/2, although some manufacturers ask $4.00 for practically the same goods.

Deliveries on fall lines are somewhat better this season and manufacturers appear to have made up their minds that it is a good thing to have a reputation of making good deliveries.

Deliveries of flat wool goods made in the eastern part of the State are somewhat late; this is ascribed to the strike which occurred there in the early part of the season.

The labor problem continues to be a serious one for the manufacturer, and in many mills there are large stocks of goods knit that cannot be finished on account of the scarcity of female help. The larger mills are continually sending agents about the State engaging help wherever possible, and we understand that some of them have arrangements with the immigration authorities to send on new arrivals whenever possible.

The salesmen soliciting business from retailers for spring delivery have started out, but are finding it somewhat difficult to get business on some lines, owing to the unpopular prices being asked. We refer especially to men's ribbed goods and balbriggans, which the jobber finds necessary to price at $2.50 instead of $2.25 as they were priced last season.

Manufacturers realize that $2.20 and $2.30 are hard prices for the jobbers to pay, but the ordinary 25-cent grades of last season have been reduced to about the lowest limit, and there seems to be nothing left for this season except to put up the price. This has resulted in a greater call for goods to retail at 35 cents, and several new lines have been put on the market, at from $2.75 to $3.00.

The lines of men's balbriggans to retail at 50 cents look very well despite the increased costs, which have been met by bleaching the carded yarns, and then tinting them up to the Egyptian shade. Some call has been felt for men's peeler goods, but not of sufficient volume to interfere with balbriggans to any great extent.

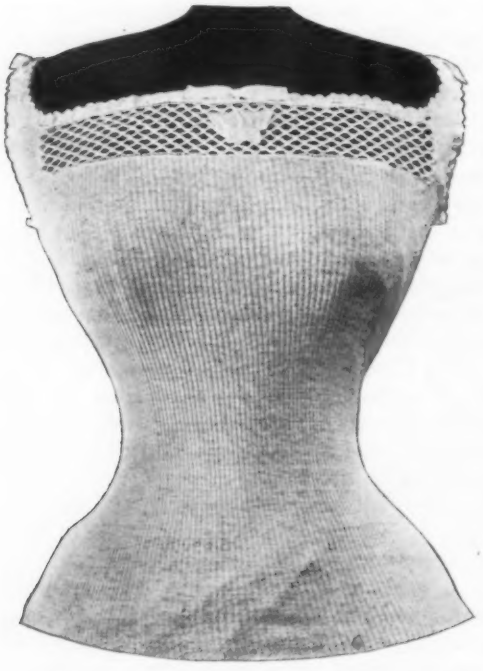
It seems as if the domestic manufacturers had fairly outdone themselves this season, in getting up their lines of ladies' 25-cent straight ribbed vests. We illustrate at Fig. 1 a medallion yoke garment, made to retail at 25 cents.

We have talked with several manufacturers regarding the N. W. D. G. A. size scale, published in our last issue, and find that as a rule they are averse to making their goods according to it, and call our attention to the fact that it is unnecessary to make the sleeves of men's and boys' goods 2 inches to 3 inches longer than the prevailing scale, or the hip measurements for children's goods 3 inches to 4 inches wider, or to make misses' vests longer than boys'

shirts, or to increase the in-seam measurements of children's pants 3 inches to 4 inches. The indications are that the most of the manufacturers will not discard their old patterns very soon.

HOSIERY.

The hosiery market conditions in the main continue about the same for the past month. Prices are very firm, and buyers are finding a few additional advances being asked. Some Western people are requesting immediate shipment for goods that are on order for spring delivery. This would indicate that the retailers are taking goods at advanced prices, and that stocks are not heavy. We learn of some manufacturers who took orders for only two-thirds of their production at the opening of the season, and are now quietly selling up the balance at top notch prices, and find that there are still quite a number of smaller jobbers who have not operated on spring lines to any great extent.



A marked scarcity exists in 10-cent grades of men's and women's goods. It is suggested that there is now a possibility for manufacturers with 108-needle frames to make good use of them. This grade of goods has heretofore been made on 144 needles, but now there is none of this gauge to be had at less than 75 to 80 cents. This gives an opportunity for the 108-needle goods in tan and black at 65 to 70 cents. We are told that they are being taken freely.

An organization of manufacturers of wool hosiery and mittens has been effected, to correct trade abuses. They have agreed not to show their line until the first Monday in November, and to make all their terms 1 per cent., 10 days, November 1st dating. F. O. B. Mill, with anticipation optional at the rate of 6 per cent. per annum. Five of the mills represented at the meeting could not agree upon the 1 per cent., 10 days, as they felt it necessary to continue to allow their trade 2 per cent., 10 days; they agreed to all the other conditions.

Considerable talk is heard regarding the probable effect of the recent tariff agreement made between the President of the United States and Germany, but in our judgment the fact that the German market is practically sold up for a year, will prevent any appreciable effect for the present or next season. We believe that the efforts of the American Protective Tariff League will be successful in terminating the agreement at the end of the year, for which time it has to run. However, in the unfortunate event of its being continued, we shall probably see a concerted action on the part of a large number of German manufacturers to establish agencies on this side. This will put a stop to the necessity of buyers going to Chemnitz and will also probably result in these manufacturers' agents selling goods direct to the retail trade to the injury of the jobber.

The increase in the exports of wool from Australasia for the nine months ending March 31, 1907, amounted to 215,000 bales.

Of the cotton manufactures valued at $815,212,402, exported by the principal nations in the fiscal year of 1906, the United States exported only 6.49 per cent.

THE MANUFACTURE OF BRAID IN THE UNITED STATES.

BY FERDINAND THUN.

(Continued from August.)

CROSS BINDING MACHINES.

Fig. 66 illustrates a 2-head, 27-carrier, cross binding machine. This machine comes under the class of lace machines, as the braided product of this machine possesses the main characteristic features of the lace fabric. One head of the machine is shown with the carriers, and the other one, without carriers. The machine is divided into 3 sections of 9 carriers each. Each section forms a 2-line flat braid, and each two adjoining sections can exchange threads by the opening of the switches on the 2-horn gears interposed between each two sections. These 2-horn gears serve only for the purpose of transmitting and crossing the carriers of the adjoining sections, and they run empty whenever the switches are closed. The operation of the switches, and thereby the formation of the pattern, is governed by a jacquard mechanism, in this instance, a pattern disc, shown in the front of the machine. This pattern disc is a somewhat simpler and less expensive means for controlling the operation of the switches in machines of this character, and within the range of patterns that machines of this class are capable of making, these disc jacquards are generally preferred because of the lower price.

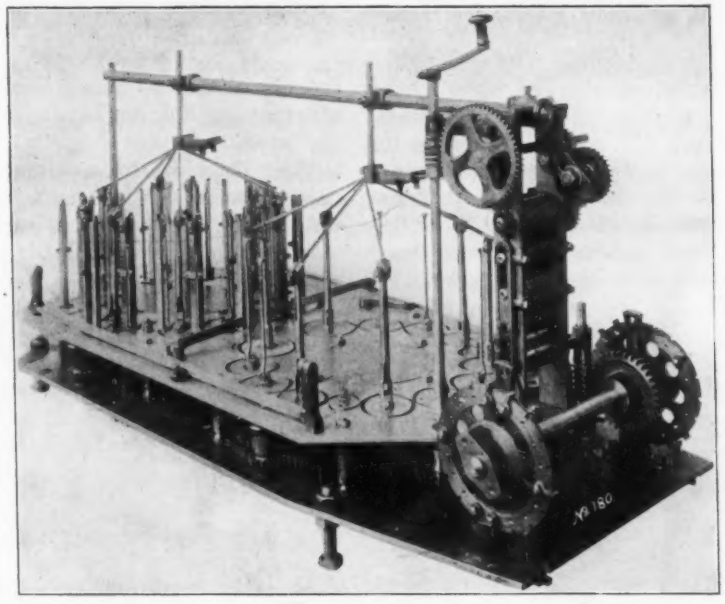


FIG. 66.

Fig. 67 illustrates the product of the 27-carrier, cross binding machine just described. This braid consists of three 2-line (9-carrier) braids joined together by the exchanging of threads from one section to the other. Two of these braids are flat braids made with even tension weights. The one on the upper edge has a pull string warp, which allows of laying the braid into curves. The opposite edge of the braid is formed into a rick-rack in the usual manner of using uneven tension weights.

Fig. 68 is made on an 18-carrier, cross binding machine, but might also be made on a 27-carrier machine by leaving the carriers of one section running empty. In this pattern the centre portion is rounded out like a president braid by the introduction of a heavy warp thread, and a fine loop edge is formed by the use of the loop attachment described in a former article of this series.

Fig. 68, as well as Fig. 67, shows upon close inspection the feature which is characteristic of all products of cross binding machines, and which has given this class of

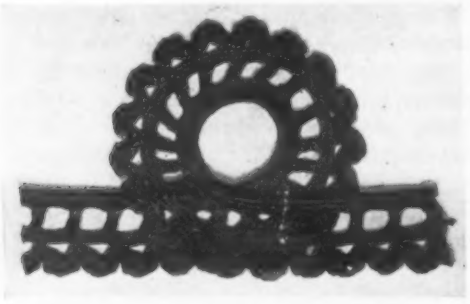
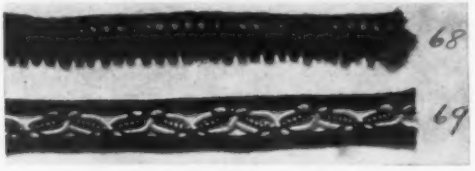


FIG. 67.

machines its name. The threads connecting two sections of braid cross each other by forming the letter X which is the direct result of exchanging carriers between two sections by means of the 2-horn gear.

are set up with two white gimps and one mixed gimp in between. All the other carriers run empty. While this pattern shows some of the general characteristics of the patterns described in the preceding illustrations, the essential difference is that the



FIGS. 68 AND 69.

threads of two adjoining sections all interbraid on the link plates, Fig. 69, but do not, and cannot run any further. On the cross binding machine the adjoining sections exchange carriers, which means that some of the threads of one section must traverse the other section to effect a binding, and vice versa. A braid like Fig. 69 could not, therefore, be produced on a cross binding machine, and it is to point out this difference that this pattern is here introduced.

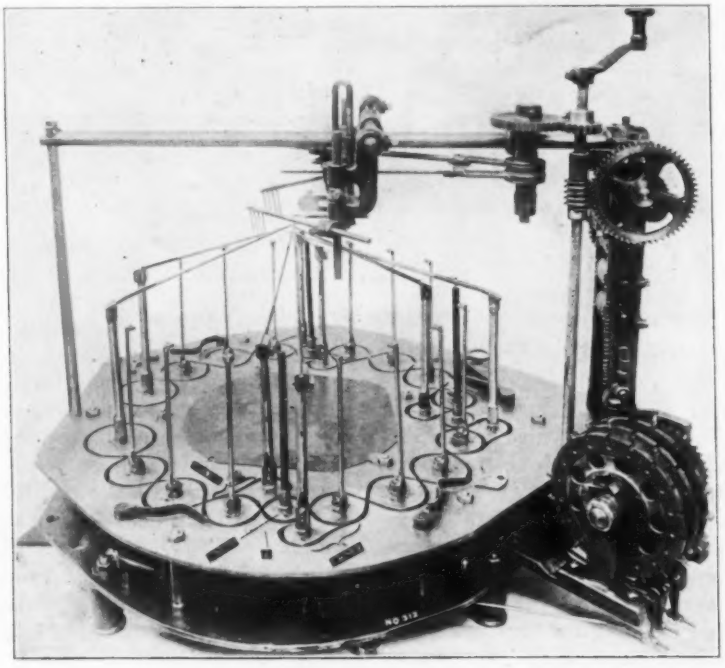


FIG. 70.

Fig. 69 is made on a 12 by 12 by 12 carrier, stripe braider. The open work in the centre is produced by having only three of the centre spindles carry any thread. They

Fig. 70 is another illustration of a cross

binding machine of 36 carriers. This machine embodies an improvement recently introduced by the Textile Machine Works, which has made the operation of this class of machines more satisfactory than the old construction illustrated in Fig. 66. In Fig. 66 the 2-horn gear which forms the connection between two sections is interposed between two 4-horn gears. The centre section of the machine, therefore, consists of four 4-horn gears which have to take care of nine carriers when the switches are closed. Ordinarily, nine carriers could not run on four 4-horn gears without collision, and it was necessary in this type of machines to resort to auxiliary gears retarding the movement of the carriers on each of the terminal 4-horn gears, by bringing them to a sudden stop and keeping them at a standstill for the distance of one horn. This was done by means of an auxiliary gear in mesh with the 4-horn terminals. One disadvantage of this construction was the hammering and jerking produced by the intermittent movement given to the carriers at this point.

The machine illustrated at Fig. 70 overcomes this difficulty by means of side tracks providing combination 5-horn terminals. The two plates or "quoits" shown in brackets form a combination 5-horn terminal composed of one 4-horn and one 2-horn gear so connected by means of suitable transport gears that the combined number of horns is five. When switch, S, is open, as shown in the illustration, the carriers will all pass over the 4-horn gears and will cross each other on the 2-horn gears and connect the two sections of the braid. In this case the side track 2-horn is shut off from the adjoining 4-horn gear, and the latter does not serve as a terminal. As soon as the switch, S, is closed, the carriers can no longer pass over the 2-horn gear from one section to the other, but must pass around the side track 2-horn gear, and this, with the adjoining 4-horn, together forms the 5-horn terminal. Each section of the machine forms a complete 2-line braid with nine carriers traveling on eighteen horns.

(To be continued.)

THE COMING FASHION IN GLOVES.

The following brief reports from the more important manufacturers of fabric gloves in Germany will give some idea as to the proportion of long and short gloves being brought out for spring of 1908:

Bernhard Reichel: For 1907, the orders called for about equal quantities in long and 2-clasp, while for 1908, four-fifths of the orders call for long gloves and only one-fifth for 2-clasp.

Heinrich Gulden: Orders call for two-thirds long, one-third short gloves.

Weiner & Pohland: Short gloves will be scarce in the market next season, as only very few are ordered. Nearly all the orders call for long gloves. Any quantity in summer goods could be sold to the United States if they could only be made up. You will find it very difficult to procure any more goods for delivery in 1908.

Chemnitz Mfg. Co.: Demand for long gloves for this year and especially for next year for the United States is abnormally large. Two-clasp gloves are not to be had any more, although long gloves are called for much more than short ones. A great scarcity of goods will be felt next season and prices will be higher than ever before.

Georgi & Weisbach: Orders for spring of 1907 called for one-third short, two-thirds long gloves. Orders for spring 1908 call for one-seventh short and six-sevenths long gloves.

Carl Gutze: Orders for next season call for about even quantities of short and long gloves.

Rich. Quellmalz: Orders for next year are about evenly divided between short and long gloves, among the latter being a great many silk gloves.

Carl Schonfeld, Jr.: Short and long gloves are bought almost evenly, the favor being somewhat to the long gloves. No cotton or Berlin gloves in 2-clasp to sell for 25 cents are in the market and nothing below a glove to job at $3.00 can be procured anywhere, and deliveries cannot be had before April or May.

Ladies' suit houses at Berlin are of the

opinion that for 1908 short sleeves will still be worn, possible three-quarter sleeves may be used also, which, however, would also demand long gloves. A leading house states that while Paris firms are now buying long gloves for fall and next spring, they are sure that short sleeves will still be in good demand and that there will hardly be a sudden change in style.

A REELING MACHINE FOR KNIT FABRICS.

This machine, the invention of Michel J. Fisher, Utica, N. Y., has for its object the automatic winding of tubular knit goods on the reel. The fabric passes over the adjustable spreader, then behind draft rolls, and is finally wound on the reel, the presser roll bearing on the goods as they are wound. Fig. 1 is a plan, Fig. 2 a side elevation of the winder.

After passing between the antifriction-rollers the web is drawn by the draft-rollers, of which the lower is on the shaft of the driving-pulley, journaled in suitable standards on the base and provided with a gear, meshing with the gear on the upper draft-roller, also suitably journaled in the standards.

The fabric having been spread and drawn between the draft-rollers is wound on the reel, removably secured on the forked ends of the supporting-arms by pins. These arms are pivotally secured on standards, so that as the fabric is wound on the reel it adapts itself freely to the other rollers.

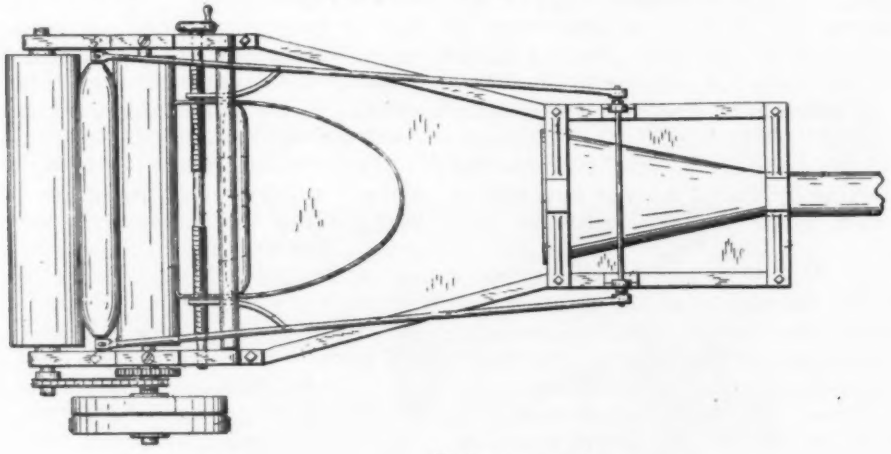


FIG. 1.

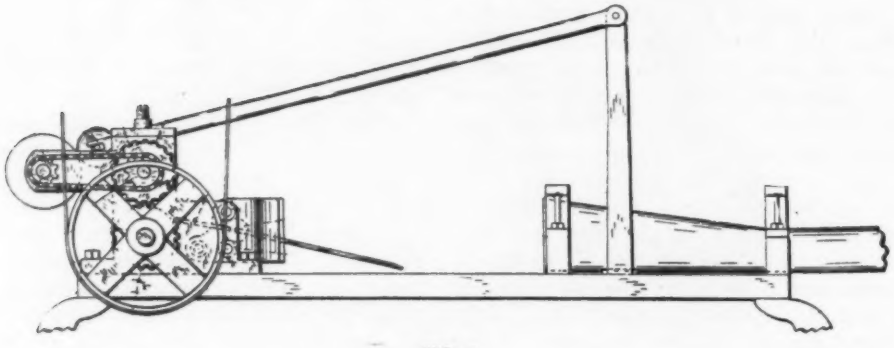


FIG. 2

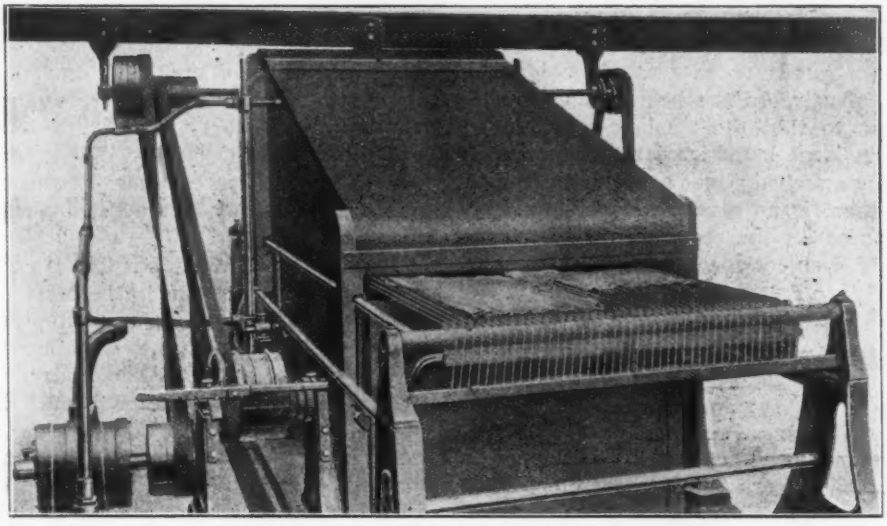
The function of this presser-roller is to bear on the stock as it is wound on the reel to condense it and keep it firm and smooth. This presser-roller should be of larger diam

eter than the draft-rollers to slip and press on the roll of fabric as it is wound, making it hard and compact.

This machine is strong and simple. The parts are easily adjusted for tubular webs of different sizes. The web is wound regularly and compactly on the reel. By the peculiar arrangement of the reel the web is held steady and true without danger of tipping, which would tend to wind the web irregularly.

AN IMPROVED HOSIERY DAMPING MACHINE.

A new machine for automatically damping hosiery has recently been brought out in England and is shown in the accompanying illustration.



A HOSIERY DAMPING MACHINE.

This machine is composed of a cylindrical casing or galvanized mist box, through which the goods to be damped have to travel. Inside this box is a series of nozzles which produce a very fine spray, and so the goods, in passing through, obtain the necessary moisture. The table on which the goods are placed consists of a stationary part and a moving part composed of galvanized steel wire, the moving part having a slight upward and forward movement transmitted to it by means of a crank arrangement. By this means the goods which are placed on the table, shown in the illustration, are carried through the mist box and delivered into a receiver at the other end. During their passage, the goods are subjected to the action of a fine mist, which is formed by eight sets of nozzles, four sets being fixed under the table and four sets above the table, so effectively moistening both sides of the material.

The arrangements for obtaining various degrees of moisture, and also the varying conditions for different classes of goods, are of special interest. By means of the pulleys and change-speed gear shown, three speeds may be transmitted to the moving table, thus enabling goods to be passed either quickly or slowly through the mist box. In addition to this, the changes which may be effected by altering the water pressure by means of an automatic water pressure-reducing valve (with a gauge, and step-by-step gun-metal cock) are practically unlimited, so that any degree of moisture can be obtained.

The mist is formed, in the usual manner, by delivering compressed air from a rotary air compressor at a pressure of from 2 to 5 lbs. per square inch to the nozzles at which the water is delivered.

It is claimed that there has not been a case of spotting, even in the finest and highest class of goods, during the seven months this machine has been at work, for the shape of the top casing effectually drains all the condensed moisture to the bottom, where it is carried off at the side of the machine. By means of this machine 6 to 8 oz. per dozen has been added to military half-hose, equivalent to about 2 to 3 oz. per pound of fabric. The production is about four to five times that of the old method, and fifty dozens of shirts or pants per hour can be treated, which, if left for about two hours, are ready for trimming, while if left for the same length of time as under the old system of damping by means of sheets, a far better finish can be produced, as a more even moisture has been given to the surface of the goods.

The machine is simple in construction, requires little attention, and enables a wide range of goods to be treated, and should prove of value to the hosiery finisher. In addition to this, the machine would be of value in large laundries for the purpose of damping starched goods previous to ironing, while there is no reason why it should not be adapted for the requirements of the finisher of woolen goods.—Textile Manufacturer.

EQUIPPING A HOSIERY MILL.

BY FOREMAN.

In estimating the cost of fully equipping a hosiery mill to turn out 600 dozen men's 200 to 220-needle half hose per day, a great deal will depend on the locality and the quality of the help, both for building the mill and operating it after being built. Taking the average conditions, a building three stories high, 50 feet wide and 120 feet long, with basement, would be large enough. The knitting machinery required would be 32 ribbers for making tops, 125 full automatic knitters, and 30 loopers. These machines, including shafting, hangers, pulleys, couplings, belts, power, etc., would cost from $35,000 to $37,500. The cost of the building would have to be considered in addition. These figures are given not with a view of furnishing a mill with the cheaper classes of machinery, but with what the writer has found to be the cheapest in the end, and this after an experience extending further back than the present system of hosiery manufacturing does, and also after coming in contact with most of the principal makes of machines which are now and have been on the market ever since the introduction of seamless hosiery.

The dye house should be entirely separate from the rest of the mill; that is, in a building entirely apart, but as close to the mill as convenient, of one story, but high studded and with ample ventilation. For present demands both oxidized black and colors would be required and these should be separated from each other as far as practicable, and would require a building 100 feet long and 50 feet wide. This would include space for aging room for oxidized goods, singeing machine, etc., and should be equipped with one tom-tom, two laundry washers or chroming machines, two hydro-extractors and three oxidizing cages. The color room should have at least six machines for the different colors with a separate hydro-extractor for colors.

It would be almost impossible to give even an approximate estimate of the cost of a dye-house for the class of goods mentioned without an understanding as to what methods of dyeing were to be used. The tendency at the present time is toward sulphur black instead of oxidized black, particularly on goods made on 200 and 220 needles, and the two methods being entirely different they consequently require different machines. It would cost considerably less to equip a dye house for sulphur black where colors also are to be dyed than it would to equip one where oxidized black and colors are dyed, for if the goods were to be dyed sulphur black and colors the building would not have to be much more than half as large as no aging or oxidizing room would be needed. In view of this fact we will consider only the sulphur black and colors, for which a building 50 feet long and 30 feet wide, one story high, would be ample.

Again the expense would depend on the

methods employed, but the machinery for a modern dyehouse would consist of six machines for colors and two for blacks, one hydro-extractor and one singeing machine, and the cost, exclusive of the building, would be between $4,000 and $5,000. Should the blacks be oxidized the additional machinery, exclusive of the larger building, would cost an additional $1,500 to $2,000.

For finishing, three dry boxes, each with a capacity of 250 dozen per day, 60 dozen hosiery boards, one large steam press and 1,500 press papers would be needed, and these with tables, etc., would cost about $2,000, giving as a total from $41,000 to $43,000 without buildings.

A SPRING NEEDLE KNITTING MACHINE

The object of this machine is to prevent stretching and wear of the yarn, and thus to produce a softer and closer fabric than has heretofore been possible. A further object is to produce a fabric with uniform wales and stitches. It is claimed that a circular knitting machine of the usual type furnished with coarse needles, say, twenty-five gauge, and provided with the invention will produce a fabric equal in fineness and appearance to one produced by the same machine without this attachment when furnished with fine needles. A cast-off wheel is set relatively to the circular gang of needles and the presser foot with its circumference line intersecting the line of the gang of needles so as to have the teeth intermesh with the needles while the latter are in the act of emerging from the pressure of the presser foot, and thus cast off the stitches as they arrive at this point. Another feature is to provide means to cause the needles at the time of the casting off successively to assume a position closer to the point upon the cast-off wheel bearing the loop of the stitch being cast off.

A cast-off wheel, presser foot, and a combined loop slackener and needle positioner are arranged in the following relative positions. The presser-foot is, as usual, outside the circle of the needles and bearing on the beards. The cast-off wheel is, as usual, within the circle, but in close proximity to the presser-foot, and the combined loop-slackener in close proximity to the cast-off wheel. Fig. 1 is a plan showing the new device; Fig. 2, a section along the line, A A, Fig. 1.

The landing and cast-off wheel is set so as to cause the lowermost wings in mesh with the needles to come in contact with the loops of the stitch previously formed and which have been pressed down in the regular way below the beards of the needles and out of the way of the thread on the feed-wheel. These loops are then lifted by the wings and

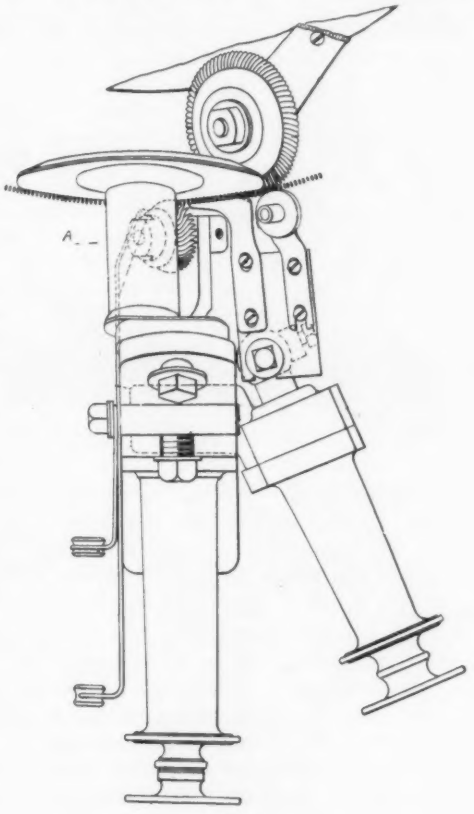


FIG. 1.

in their upward movement are landed on the beards below the presser-foot, which has pressed the beards against needles, as usual, to allow the loops to pass over them. As the combined landing and cast-off wheel continues rotating, these loops are cast off successively and the stitches completed.

The improved loop-slackening and needle positioning and steadying device constituted

by the beveled wheel has been meanwhile borne upon by the needles as they move past it, and the needles from which the stitch is being cast and those following it are successively caused to assume a position inward of their normal position and in close proximity to and below the wings of the combined landing and cast-off wheel, and the needles will assume this position simultaneously with the passage of the wings outwardly and upwardly from between the needles, and consequently as the stitch is being cast off.

In this manner the wheel relieves the loop of yarn of undue strain, slackens it and ob-

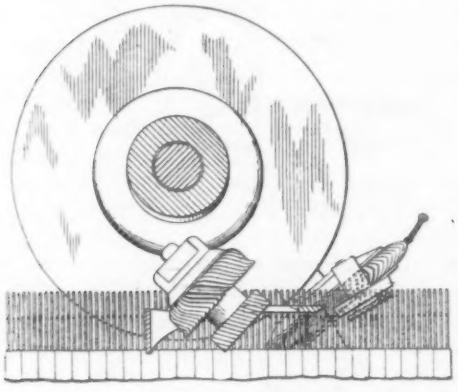


FIG. 2.

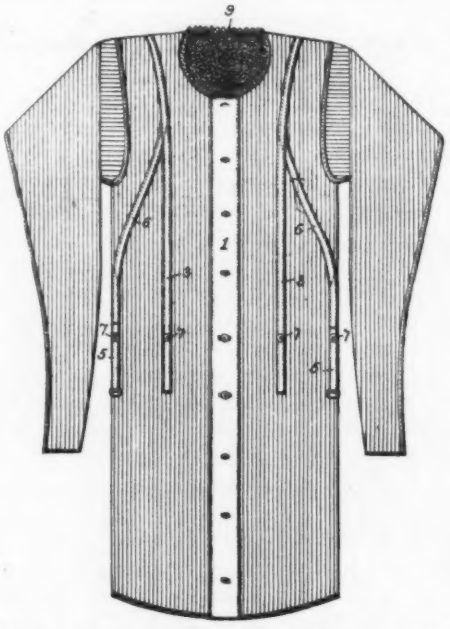
viates stretching. At the same time the friction created between the needles and the device steadies these needles sufficiently to prevent their being displaced laterally away from one another, which has been found to occur at intervals and make the wales and stitches irregular. It is also claimed that the positioning of the needles creates a greater area of frictional contact between the fabric and the combined landing and cast-off wheel, because the fabric is caused to bear not only upon the upper edges of the wings, but also upon the points and a portion of the lower edges, distributing the strain throughout a greater proportion of the fabric. This enables the cast-off wheel to be set farther back from the needles, which prevents the wings tripping upon the ends and sides of the latter.

It is claimed that this device renders it possible to dispense with the separate landing-wheel, and enables the cast-off wheel to answer the purpose of both landing-wheel and cast-off wheel.

The inventor states that by the use of the device additional feeds can be accommodated and the speed of the machine increased from fifty to one hundred per cent., correspondingly increasing the output of this type of machine, and consequently reducing the cost of production.

A KNIT UNDERGARMENT.

This construction of a knit undervest is to obtain a garment that will be as elastic in the skirt portion as an ordinary undervest, but less elastic in the body. The illustration



shows a front view of a sleeved garment, although the improvement is applicable to both sleeveless and union garments.

The garment shown in the drawing is open in front from neck to tail and is provided with a button-hole strip, although, if desired, the skirt portion may be composed of seamless tubular web, the front opening, with its button-hole strip, extending only from neck to waist.

The garment is composed of a ribbed knitted web, for the purpose of ensuring the desired elasticity. In the skirt portion the

full natural elasticity of the web is preserved, but the body portion, from the waist to the shoulders, is provided with bands or tapes of woven fabric, or other relatively inelastic material, which are intended for connection to hose supporters or to skirts or other nether garments.

The drawing shows the skirt provided with front tapes, 3, connected with rear tapes over the shoulders, and side tapes, 5, connected to the front and rear tapes by means of diagonal tapes, 6, the tapes being provided with buttons, 7, at the waist and with such additional buttons, or other fastening devices, as may be necessary to accommodate the various garments or garment supporters that are to be attached to it.

Various waists of cloth, muslin, or similar woven material, have been made, provided with tapes or straps of the character here shown, but these waists must be worn in connection with a knitted undervest and the combination of the two garments is, in many cases, so bulky as to be uncomfortable to the wearer. This is especially true if the undergarment is composed of heavy yarn or is provided with a fleeced lining, such as that represented at 9. This invention provides a single garment, overcoming the objections noted above to the use of the two garments. The skirt portion of the improved garment retains the full natural elasticity of the ribbed knitted web of which the garment is composed, but the upper or body portion is stiffened by the tapes or bands so that it affords proper support for the garments suspended from it.

CORRECTION.

On page 139 of our July issue in the note on the equipment of a small knitting mill, it is stated that the bands, labels and boxes for the finisher would be about 22 cents a dozen for manufacturing. It should have read that the expense including the bands, labels and boxes for finishing would be about 22 cents a dozen.

It is estimated that between 90 and 95 per cent. of the piece goods imported into Australia are made in British mills.

Equipping a Hosiery Mill.

Editor Textile World Record:

What will it cost to equip a hosiery mill to turn out 600 dozen pairs of men's half hose per day on 200 and 220 needle machines? We shall buy the yarns and do our own dyeing. P. K. (859).

This question is answered by an article on another page of this issue.

Cashmere Hose.

Editor Textile World Record:

Replying to Carroll (892) in your July issue, I would say that the rib top is made on a 160-needle, 36 gauge, 4 1/4-inch diameter machine; the foot or body on a 144-needle 36-gauge, 3 1/4-inch diameter machine.

Dan Bucklin gives 148 needles for the foot or body, but I think he made a mistake in counting as there are only 144. A 160-needle 36-gauge 4-inch machine would make a much better top and I prefer the 4-inch machine to the other as there is more "spring" in the top after finishing. I always make tops the same number of needles as the body. If a 144-needle body is made with a 160-needle top it will be necessary to stitch double, whereas if there are the same number of needles in both there will be no stitches to double; it will be easier to top and there will not be so much likelihood of bad work from drop stitches; the finish of the hose round the transfer of the top to the body looks much better on even needles.

In finishing the sample was fulled to a certain extent; first scoured, then put in a kicker fulling machine and fulled to desired weight. Some grades of goods require to be fulled from 15 to 30 minutes, others from 10 to 15. The goods might also be scoured and fulled in a laundry washer if care is taken, as this saves much handling of the goods. They should first be scoured with palm oil soap and then washed slightly in warm water with olive fig soap (a potash soap) for fulling, as this gives the best results on high class as well as low class cashmeres, merinos, and woolen goods.

It is rather difficult to determine the original size of the yarn exactly, but I should say the back, or inside, which is cotton, would be 11s or 12s single spun soft woolen twist; the worsted of the face, or outside, is about 24s single. This would make about a 2-pound hose. A finer cotton and a heavier worsted might be used, say 14s single cotton and 20s single worsted; this would give a hose of about the same weight, but it would cost more to manufacture and would not sell any better.

Ravenswood.

In making cashmere hose I would use an 80 by 80, 4 1/4-inch cylinder, 36 gauge needle machine for the leg and a 140-needle, 3 1/2-inch cylinder, 36 gauge, using from 18s to 30s yarn according to quality. I think it is preferable to use more needles in the ribber than in the leg as it gives a better shaped foot. I would not advise much fulling as this tends to destroy the elasticity and does not permit the smooth, clean appearance and finish so much desired in cashmere hose. Adams.

Manufacturing Gloves and Mittens.

Editor Textile World Record:

I would like some information as to the cost and number of machines used in the manufacture of knit gloves and mittens, the number of people employed, the wages paid, etc. Dexter (891).

To make these goods in all sizes it will be necessary to have machines of 3, 3 1/2, 3 1/3, 3 3/4 and 4-inch cylinders. For fine work 36 gauge needles will be required, for medium, 24 gauge, and for coarse work, 18 gauge, and of course a different sized cylinder for each of the different sizes of needles. The machines should be set close together in a row on each side of the room and fitted with straight and cross belts.

One girl should run twelve machines. If she is a good operator and has good yarn she could turn out seven dozen or more of double mittens from each machine in a day, for which she would be paid about $1.25 a day. Piece work prices range from 3/4 to 2 1/2 cents a dozen. It would be difficult to estimate the average production per day for the whole factory. It is essential that a good quality of yarn be used as it pays for itself in a short time, saves much unnecessary work and many seconds.

One or possibly two winders would be required, which should be in the knitting room convenient to the knitters. Two girls would be required for each machine at $5.00 a week each. This winder should be for cops or skeins, according to the form in which the yarn is bought.

A girl to run a power cutting machine would be paid about $5.00 or $6.00 a week on piece work. There should be a sufficient number of sewing machines to take care of the production of the knitters. The girls on these machines should turn out from 23 to 30 dozen mittens a day, but the production of gloves would not be more than 10 dozen a day as they require so much more work. Forms of all sizes will be required for steaming and drying the goods after they are finished; after drying they are sewed together in pairs and packed. The steamers and the girls to turn the gloves and mittens would be paid about $4.00 a week. Another necessary machine puts the clasps on the gloves. A boy to do sweeping and other odd jobs around the place would receive $5.00 or $6.00 a week more; there would also be a man to pack and ship the goods. A practical knitter should be in charge of the knitting room and be able to keep the knitting and sewing machines in good running order. The forewoman in the sewing room should be able to show the girls how to run the machines as well as keep the piece workers' time. After the mill is once started it will be easy to tell how much help will be required and if they are treated fairly there will be no trouble in keeping them. Pierpont.

Seconds in a Hosiery Mill.

It is almost impossible to give the percentage of seconds, as different makes of machines will give different amounts, varying from 10 to 30 per cent. with ring spun yarns. By using mule spun yarn this might be reduced. In any case a good deal depends on the knitters; if they are experienced the percentages given are about as low as can be made; if they are beginners it is impossible to determine how many seconds will be made. Ravenswood.

Size of Hosiery Yarn.

Editor Textile World Record:

Please give method of calculating the yards per ounce and the weight of 120 yards for 12s, 14s, 16s, 18s and 30s cotton yarn. Coliseum (913).

Reducing the cotton count (840 yds. per lb.) to runs (1,600 yds. per lb. or 100 yds. per oz.) gives the yards per ounce without further calculation.

No. 1 cotton is equal to 840/1600 or .525 run. Then:

12s=(12 × .525) =	6.3	runs or	630	yards	per	ounce
14s=(14 × .525) =	7.35	" "	735	"	"	"
16s=(16 × .525) =	8.4	" "	840	"	"	"
18s=(18 × .525) =	9.45	" "	945	"	"	"
30s=(30 × .525) =	15.75	" "	1575	"	"	"

This reduction can be made mentally by bearing in mind that the run count is 5 per cent. more than one-half the cotton count. The mental operations for various counts are:

12s= 6 + .3 = 6.3
14s= 7 + .35= 7.35
16s= 8 + .4 = 8.4
18s= 9 + .45= 9.45
30s=15 + .75=15.75
36s=18 + .9 =18.9
40s=20 + 1. =21.

The amount to be added to the one-half is found mentally by dividing the latter by 1/2. Thus: $6 \div 2 = .3$; $20 \div 2 = 1.0$; the decimal point being moved one place to the left.

The cotton count indicates the 840-yard hanks per pound or the 120-yard (1/7 hank) lengths per 1,000 grains (1/7 lb.). It follows that:

1,000 (grains) ÷ grains per 120 yds. = cotton count. Then:

1000 ÷ 12 = 83.	grains	per	120	yards	12s
1000 ÷ 14 = 71.4	"	"	120	"	14s
1000 ÷ 16 = 62.5	"	"	120	"	16s
1000 ÷ 18 = 55.5	"	"	120	"	18s
1000 ÷ 30 = 33.3	"	"	120	"	30s
1000 ÷ 40 = 25.	"	"	120	"	40s

Proportion of Seconds in a Hosiery Mill.

Editor Textile World Record:

In a mill making seamless half hose from 12s and 16s yarns on 176 and 200-needle machines, what is a reasonable proportion of seconds?

Engineer (900).

It is a very difficult matter to tell the exact amount of seconds that should be made as it all depends on circumstances; for instance, some makes of machines will make more seconds than others; a good deal depends on the yarn also, whether it is the right size and whether it is well wound and free from lumps, etc., also whether it is carded or combed. The question of help must also be considered, as in localities where labor is scarce it is very difficult to secure competent operators. In our mill we are making a line of half hose on 180-needle machines, using 14 carded yarn and our seconds for the year 1906 amounted to a little less than two per cent. Of course this was under favorable conditions as we had good experienced help and the very best of carded yarn. If "Engineer" is working under the same conditions he should do equally well. I should be very much dissatisfied if the seconds for this class of goods went over three per cent. Dan Bucklin.

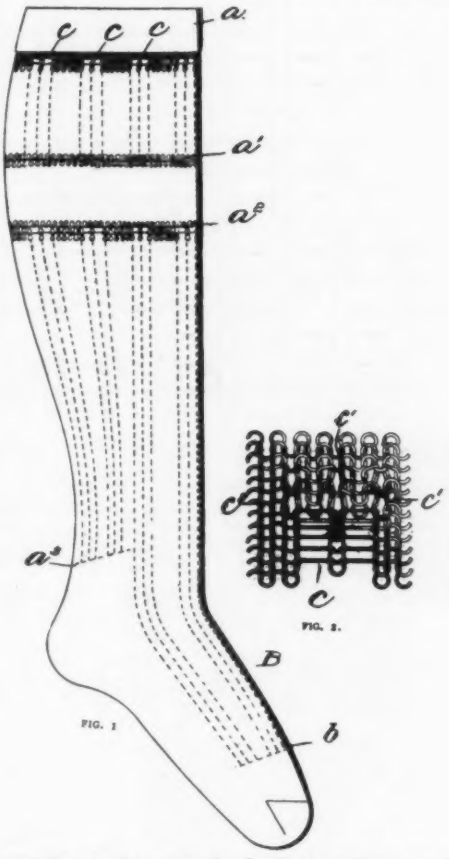
KNITTING PATENTS.

HOSIERY. Seamless. 850,940. Edward E. Kilbourn, New Brunswick, N. J., assignor to the Kilbourn Knitting Machine Co.

The present invention has for its object the making of a seamless stocking provided with drop-stitch ornamentation applied in a novel manner and producing novel results.

In the drawings, A indicates the leg, and B the foot, of the stocking. The stocking is made with a plain welt or hem, a, at the top of the leg. Immediately below the hem in this instance certain of the needles are caused to cease knitting, making open-work spaces, c c c, the thread in such spaces extending directly across a space as wide as that occupied by a single stitch of plain knitting or wider. At the point, a′, all the needles are again operated to make plain knitting, and at the point, a^2, the same needles are again caused to cease knitting and the drop-stitch open-work is again produced.

The open-work, as shown, extends around the



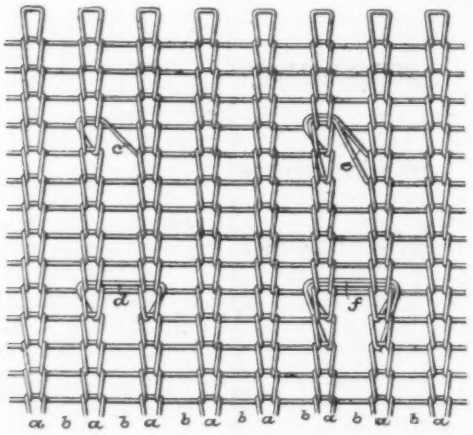
leg of the stocking on the back as well as on the front. The needles which cease knitting, to form the open-work at the back of the leg, are thrown into operation for plain knitting at the point, a^2, above the heel of the stocking, and the needles which cease knitting to form the open-work upon the front of the stocking are caused to resume plain knitting at some point, as b, above the toe. The stocking therefore has the openwork all around the leg and has plain knitted portions above the drop-stitch open-work and plain knitting between the open-work and the toe. The stocking has also the heel, bottom of the foot, and the toe knitted in plain stitches.

KNITTING MACHINE. Circular, Independent Needle. 857,836. Charles A. Santmyers, Philadelphia, Pa.

KNITTING MACHINES. Mechanism for Operating Special Needles in. 860,868. Emil A. Hirner, Allentown, Pa.

KNITTED FABRIC. 846,353. Robert W. Scott, Leeds Point, N. J., assignor of one-half to Louis N. D. Williams, Ogontz, Pa.

This invention relates to that class of knitted fabrics in which ornamental open-work effects are produced by the formation of eyelet-holes in the



knitted web, the object being to produce such eyelet-holes without the necessity of transferring stitches of one needle-wale to an adjacent one. This web can be produced upon a machine having ordinary latch-needles instead of the spring-beard needles usually employed in machines for making this character of fabric.

KNITTING MACHINE. 854,885. Andrew V. Groupe, Philadelphia, Pa., assignor to E. Jenckes Mfg. Co., Pawtucket, R. I.

KNITTING MACHINE. 856,860. George H. Gilbery, Germantown, Pa., assignor to Kilbourn Knitting Machine Co., New Brunswick, N. J.

KNITTING MACHINE Yarn Measuring and Feeding Device. 855,316. Daniel Hurley & William T. Barratt, Bennington, Vt., assignors to Charles Cooper, Bennington, Vt.

KNITTED UNDERGARMENT. 855,329. Quentin McAdam, Utica, N. Y., assignor to Utica Knitting Co., Utica, N. Y.

KNITTING MILL NEWS.

New Mills.

Georgia, Augusta. J. J. Tyler, corner McKinnie and D'Antignac Sts., expects to start a small hosiery mill and is interested in receiving information on the subject.

*Minnesota, Minneapolis. The Northland Knitting Company expects to begin the construction of its plant in the next few days and have the building completed on November 1st. This company is a reorganization of the Appleton Knitting Company of Appleton, Wis., and the Twin City Knitting Company of Minneapolis. The capital stock is $150,000. When completed, sweaters, shawls, etc., will be manufactured and 75 to 100 hands will be employed. Geo. McNamee is president and buyer, and Arthur W. Stephens, treasurer.

*New Jersey, Camden. It is reported that the Merrimac Manufacturing Co., which was recently incorporated with a capital of $125,000, is soon to start up its plant, having leased the third floor of the Millette Bldg. at 95 Federal St., where they will install 40 knitters for the manufacture of women's and children's ribbed underwear. The company expects at a later date to increase the number of machines to 200. The officers of the company are E. G. Loche, president; W. Leonard Hurley, vice president, and George A. Frey, secretary and treasurer.

*New York, Boonville. It is reported that space has been leased for the new knitting plant being started by L. M. Littauer and that machinery will be installed within a few days.

New York, New York. The A. M. Milander-Newman Company has been incorporated with a capital of $25,000. The incorporators are William Keefe, William Roach and Ford Morgan of New York, and A. M. Milander of Providence. Hosiery will be manufactured.

*Georgia, North Augusta. Work has been completed on the knitting mill of W. H. Green and Mr. Bush. It is expected to be running shortly.

*New York, Norwich. The Norwich Knitting Co. is operating part of its machinery. Knitting machines are being set up as fast as they arrive.

*North Carolina, Statesville. The Bradford Knitting Mill is operating part of its machinery.

Ohio, Circleville. A new building, 16 by 30 feet, has been erected here by H. D. Ferrell, for a knitting plant. He is installing 5 Branson knitters and a ribber and for the present will make men's mixed common socks. Uses yarns, 4, 6, 8 and 10. Product to be sold to retail dealers.

Ohio, Cleveland. The Dr. Swautees Knitting Company has been incorporated with a capital stock of $150,000. Samuel F. Swantees and others are the incorporators.

Pennsylvania, Boiling Springs. Jacob C. Shamberger, of Parkton, Md., is starting a plant on 144 needle, white foot, men's half hose.

Pennsylvania, Nazareth. Fred. Wunderly and a son of H. Kraemer are reported as about to start up a plant for the manufacture of full fashioned hosiery. Seven knitters, formerly operated at the Urner plant in Philadelphia, will be installed.

Pennsylvania, Philadelphia. Largman Brothers, 1001 Filbert St., manufacturers of neckties from piece goods, have recently installed a number of knitting machines for the manufacture of natural and artificial silk neckties.

Pennsylvania, Philadelphia. The Actual Knitting Mills, recently reported incorporated, has secured quarters in Germantown on Wakefield St., below Collom, where they have rented a two-story brick building which they are equipping with machinery for the manufacture of knitted slippers, etc. The office of the company is in the Lippincott Bldg., 12th and Filbert Sts.

*Wisconsin, Hartford. The branch factory of the Paramount Knitting Company is in operation. Twenty-five machines have been installed.

Enlargements and Improvements.

*Illinois, Rochelle. The Vassar Swiss Underwear Co., which recently increased the capital stock from $40,000 to $200,000, will enlarge the plant with a new building in the near future. They expect to add 25 additional knitting machines of their own design and made at this place.

Massachusetts, Adams. J. O. & O. J. Purnell are to increase the capacity of their plant.

*Massachusetts, Needham. George E. Wye Co. advises us that their whole plant will be moved to South Framingham in order to make room for enlargements. Manufacturing will be continued at Needham for the present and the complete equipment will not be in the new quarters before the first of the year.

New York, Poughkeepsie. C. F. Hoag, proprietor of the Lindenwald Mills, has purchased the Grosser knitting machines which were operated by the U. S. Knitting Mills Company at Hawley, Pa. They will be moved to Poughkeepsie.

*New York, Sherburne. The Canasawacta Knitting Co., reported increasing capital stock, will not add any new machinery.

*North Carolina, Winston-Salem. The new mill for the P. H. Hanes Knitting Company has been completed and machinery will be installed at once.

Pennsylvania, Philadelphia. The Simons & Struve Hosiery Company, which leased the old Baird Mill on Frankfort Avenue, will occupy the entire building and will install machinery in all departments.

Pennsylvania, Port Carbon. The Superior Knitting Company is increasing its capacity 40 per cent. by the addition of several new machines.

Pennsylvania, Topton. The Crown Knitting Company is planning to build an addition to its plant.

Pennsylvania, Philadelphia. The Achuff Knitting Mills (Inc.) is adding 20 knitting machines and 14 sewing and button hole machines.

Pennsylvania, Philadelphia. It is reported that the Ideal Hosiery Mills will add new machinery for women's lace hosiery.

Pennsylvania, Philadelphia. The Defiance Knitting Mills, Fretz Bldg., 10th and Diamond Sts., report that they are exceedingly busy on women's and children's ribbed underwear in cotton, wool, worsted and mercerized. They operate 18 latch needle knitters and 28 sewing machines and intend to increase the production of the plant by the addition of six new Swiss rib machines and finishing machines. The new machinery will be in operation by October 1. They sell direct with agents in New York and the West.

Pennsylvania, Philadelphia. It is reported that W. F. Taubel is about to increase the production of his branch factory here by adding 25 new knitters. The main office and mill is located at Riverside with branch mills in different sections of the country. He manufactures hosiery of all kinds, both full-fashioned and seamless and is reported as being very busy.

Pennsylvania, Philadelphia. The German American Hosiery Co. has increased its capital stock from $150,000 to $200,000. The plant will be enlarged.

Pennsylvania, Philadelphia. The Allen Hosiery Mills, 4949 Mulberry St., Frankford, manufacturers of ladies' plain hosiery, are about to increase their production by putting in 5 new knitters. The selling agents for this mill are Hecht & Camp, New York.

Pennsylvania, Wilkesbarre. It is reported that the Hess-Goldsmith Co. will add another story to its mill.

Mills Starting Up.

Massachusetts, Methuen. The Lawrence Knitting Co. has shut down for two weeks.

Pennsylvania, Schuylkill Haven. Jacob Ginther's mill, in which he manufactured women's vests on 5 knitters and 8 sewing machines, which has been shut down for the past few years, is about to be started up again under the management of George A. Ginther, until recently employed by the Girard Co., of Port Carbon.

Rhode Island, Woonsocket. The Glenark Knitting Company has been started and it is expected that the full equipment will soon be in operation.

South Carolina, Bowling Green. The stockholders of the Bowling Green Knitting Mills have decided to discontinue operations and to sell the plant. It has been placed in the hands of J. Edgar Poag, of Rock Hill, South Carolina.

Mills Shutting Down.

New York, Herkimer. The plant of the Mark Mfg. Co. has been shut down.

Personals.

J. A. Ruth has accepted the position as superintendent of the new Bradford Knitting Mill, Statesville, N. C. He was formerly employed at Kernersville, N. C.

A. C. Marsh has severed his connection with the Narragansett Textile Company, Pawtucket, R. I., and has accepted the position as superintendent of the Hampden Knitting Company, Springfield, Mass.

Fred Traver has accepted the position as boss knitter for the Hampden Knitting Company, Springfield, Mass. He was formerly with the Kavanaugh Knitting Co., Cohoes, N. Y.

J. P. Fogarty has accepted a position as superintendent of the Fort Leyden Knitting Company, Fort Leyden, N. Y. He was formerly employed at Utica, N. Y.

F. O. Benson has accepted the position as overseer of dyeing at the Utica Knitting Mills, Utica, N. Y. He was formerly employed at the Victor Knitting Mills, Cohoes, N. Y.

Carrol P. Rogers has resigned his position as superintendent of the Excelsior Knitting Mills, Union, S. C., on account of ill-health.

W. P. Brayton has accepted the position as superintendent for the Clayville Knitting Company, Clayville, N. Y. He was formerly superintendent of the Mohawk Valley Mills, Mohawk, N. Y.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Self Oiling Loose Pulley. Johnson & Bassett, Worcester, Mass. A patented self oiling loose pulley which has been tested under very severe conditions for over two years. It runs on a separate bearing set screwed to the shaft and can be easily applied to any shaft, even at badly worn places. The oil is distributed to the bearing by centrifugal force and is used over and over again, reducing the quantity required to a minimum.

Pick Counter. Oberholzer & Busch, Zurich, Switzerland. A loom attachment by which the listing is marked at intervals of any given number of picks, thus enabling the weaver to determine by the application of a gauge whether the required number of picks are in the fabric.

Electroless Pipe Covering. The H. W. Johns-Manville Co., New York, have brought out a covering for pipes to prevent electrolysis. An account of this covering will be found on another page of this issue.

Selvage Motion. E. Ohlischlaeger, Viersen, Germany. A loom attachment by which it is claimed that two widths of cloth can be woven at the same time with two solid selvages on each piece.

Dewing Machine. Samuel Walsh, Sons & Co., Bury, England. An improved dewing machine. Water is sprayed on the face side of the goods and any variation in the temperature is detected at once. The pressure is easily regulated, the water being filtered and the waste water being again forced through the machine.

Knitting Machine. Moses Mellor & Sons, Ltd., Nottingham, England. An improved circular knitting machine for knitting ribbed tops, cuffs, anklets, sleeves, etc., in a variety of stitches. The needle cylinder and dial revolve instead of the cam shaft. The whole tube is visible during the knitting process.

Combing Machine. The Norddeutsche Wollkammerei and Kammgarnspinnerei, Delmenhorst, Germany. An improved comber built on the Heilmann principle and embodying many new features.

Piece-End Sewing Machine. Samuel Walsh, Sons, & Co., Bury, England, have lately brought out a new piece-end sewing machine, which it is claimed is capable of a wide range of work, simple in construction and costing very little for repairs.

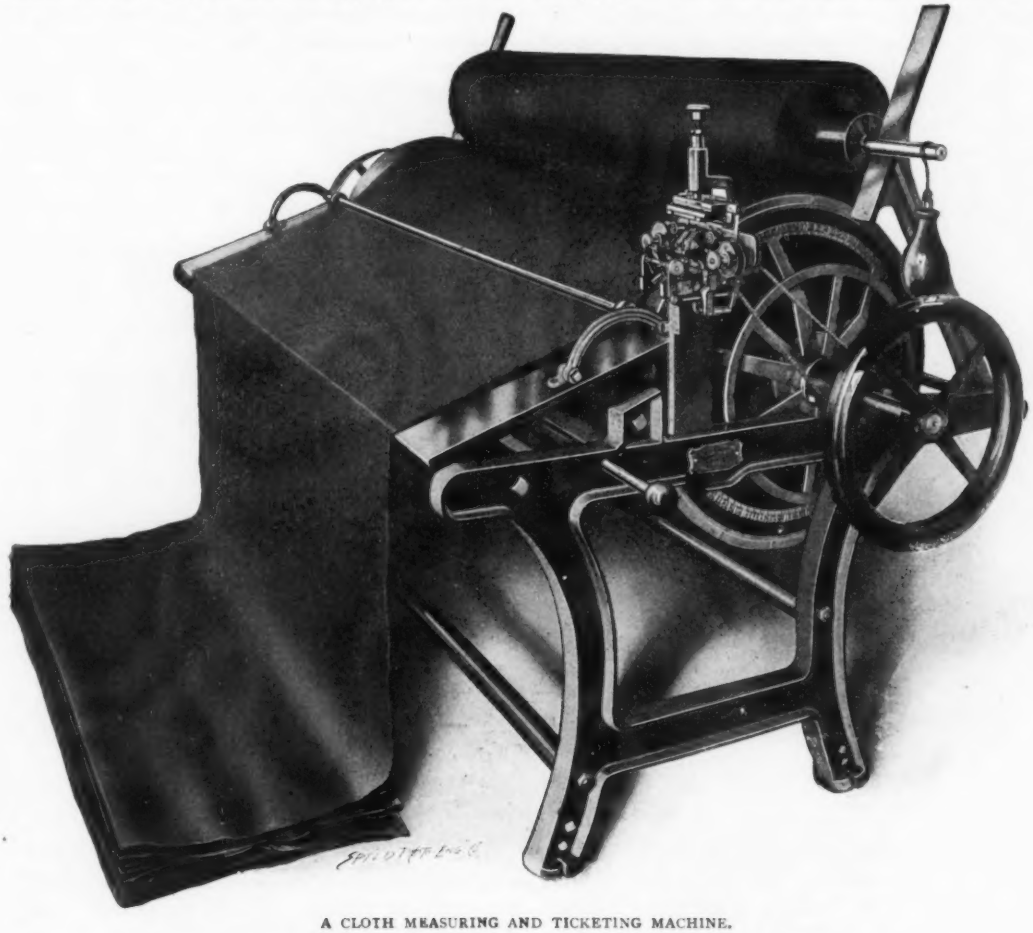
Cotton Combing Machines. Dobson & Barlow, Bolton, England. An improved method of mounting the leather detaching rolls on cotton combing machines. The ends of the detaching roller are set closely in tubes, each having the usual flat sides which bear against the metallic lifters. The lifters are in the inner ends between two flanges formed on the tubes instead of in the outer end as heretofore. It is claimed that "curling" in the web is obviated.

Gassing Machine. Asa Lees & Co., Oldham, England. A gassing frame on which the yarn is passed through a long vertical chamber in which the gassing operation is performed. Each chamber has a separate cap for the control of the flame. It is claimed that by this method much better results are obtained and that all the products of combustion are consumed.

Cylinder for Cloth Shear. Ferd. Mathonet, Aachen, Germany. A cylinder having two sets of spiral blades, one running to the right, the other to the left. It is claimed that in this way a much smoother face is obtained on the goods.

A CLOTH MEASURING MACHINE.

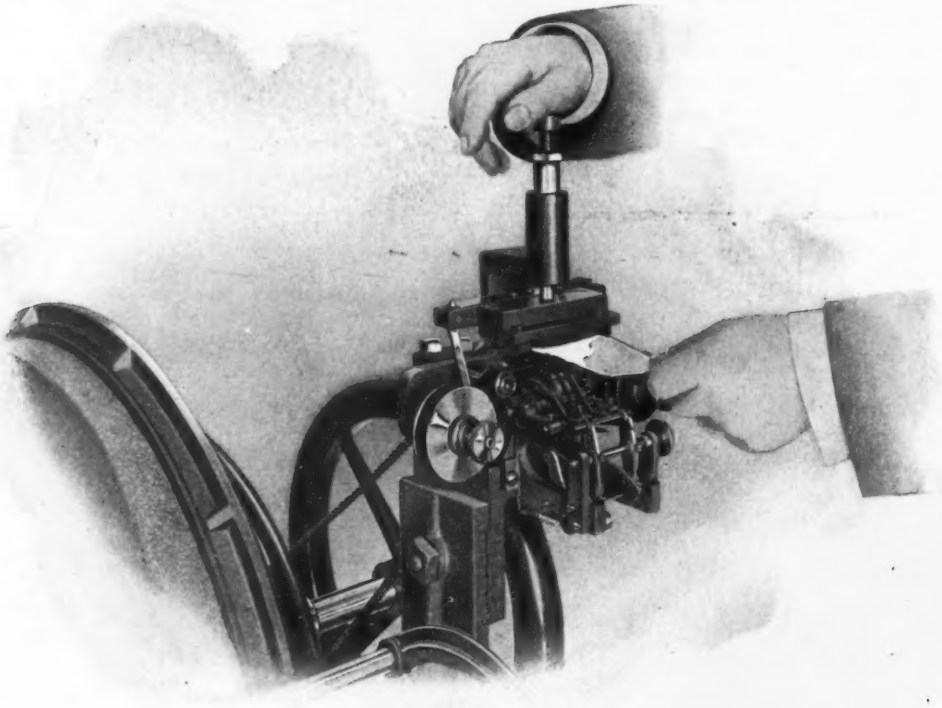
Inaccurate measuring of textile fabrics results either in continual claims for short measure or a steady loss to the manufacturer by giving more than the indicated length. Many years ago before cloth measuring machines were adopted and the practice was to measure cloth by a yardstick, a finishing-room operative in a New York mill was discovered one day measuring cloth in such a way that the thickness of his thumb was added to the length of the yard stick. On testing some pieces measured in this way the superintendent found them each from one-half to a full yard longer than the length on the ticket. The mill was making goods valued at $4.00 a yard and the operative had been measuring in this way for years, the product which amounted to 50 or 60 pieces a day. Naturally no complaints had ever been received from the buyers regarding wrong measurement, because they were getting more than they paid for. The mill, however, was losing many thousands of dollars every year. The same results follow from inaccuracy in measuring, whether by hand or machine, and hence the great importance of accurate measuring of such a valuable commodity as textile goods.



A CLOTH MEASURING AND TICKETING MACHINE.

It was to provide manufacturers with an accurate and convenient method of measuring, that Parks & Woolson developed the measuring machine, which is shown at Fig. 1, equipped with a ticket printer. The measuring drum is the vital point in every cloth

measuring machine; most of the defects in cloth measuring are due to some defect in the drum. In the Parks & Woolson machine a large drum is used, it being two yards in circumference and made of sheet steel mounted on iron heads, no wood being used in the construction. The surface is covered with garnet sand, ensuring a contact between the cloth and the drum and prevents any slipping. The drum can be adjusted to suit the operator to read them at a glance. The eighth dial can be adjusted separately so that the reading can be done at any point in the middle of the piece of cloth and the dial then set at zero for a new measurement if the piece is to be cut or marked for different lengths. The machine is equipped either with the folder or rolling attachment so that the measured goods can be delivered in folds or wound on rollers as desired.



A CLOTH TICKETING MACHINE.

extreme variations in the goods to be measured. It is adjusted at the shop and requires no further change unless some very elastic goods, such as eider downs or cheese cloth, are to be measured.

The dial wheel at the right is connected by differential gears with the drum; no cams, ratchets or dogs being used. It runs smoothly and slipping is impossible. The yard lengths measured are indicated on the dial as shown in Fig. 1. The eighths are indicated on a separate dial, the two being adjusted so that one pointer indicates both the yards and the eighths, making it possible for

The ticket printer is a new and important attachment to the machine. It prints the measure in yards, halves, quarters, and eighths, up to 99 7/8 yards on any style or size of ticket. The metal type is 1/8-inch wide and 3/16-inch high, and is used with the regular typewriter ribbon. It is driven by a chain from a shaft of the measuring drum. The printer is set at zero by a partial turn of two thumb nuts. The goods are then measured in the regular way after which the ticket is inserted in the slot face down. The ticket is then printed by a light blow on the plunger as shown at Fig. 2. The printed

figures are then compared with those indicated on the dial, entry is made in the mill book and the ticket attached to the piece.

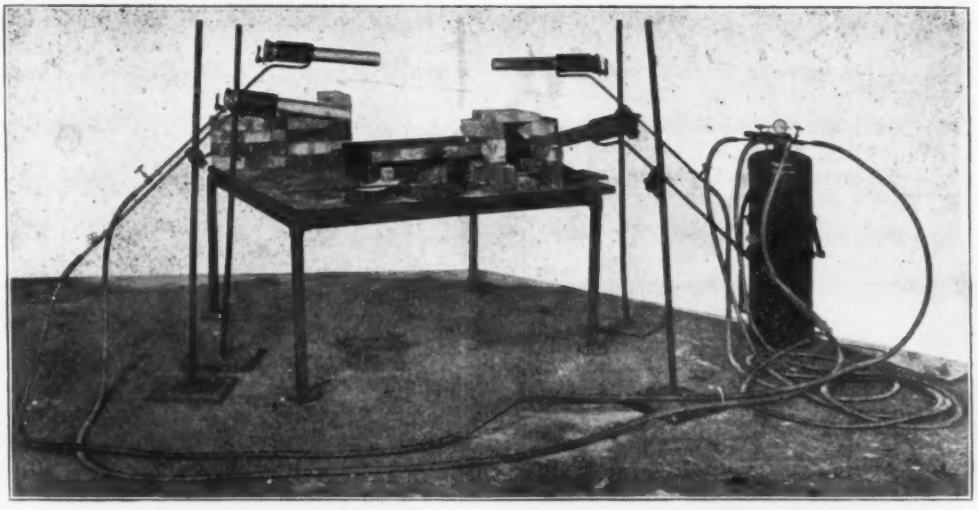
FERROFIX AND ITS USES.

The American Ferrofix Brazing Co., 1005 Arcade Building, Philadelphia, Pa., manufacture a brazing compound known as Ferrofix and also do a general repair business. The Ferrofix process has been thoroughly tested. Thousands of castings repaired by it and now in use bear testimony to its merits. It is claimed that a joint when brazed with Ferrofix is as strong as any other part of the casting. Success in the use of the process depends on obtaining a suitable temperature for which a gas, kerosene or acetylene burner is provided.

The gas torch requires compressed air for perfect combustion (to produce the blast flame), which means a stationary plant. The kerosene burner, however, has been developed so that a perfect non-carbonizing torch can be furnished; it is portable, compact in construction and simple and inexpensive to operate.

The oxy-acteylene torch has its advantage on account of its tremendous heat, which is used on steel as well as cast iron.

Every mill manager knows of the heavy loss that frequently occurs by the breaking of a casting in some important machine on the production of which the whole mill depends. In such emergencies Ferrofix brazing reduces the loss of production to a minimum by enabling the machine to be repaired and put in operation with the least possible delay. A Ferrofix brazing plant at a mill is consequently an insurance against such loss. The process is simple and does not require the services of a high-priced man. In a few days any good mechanic will be able to handle an ordinary broken casting. The Ferrofix brazing plant with accessories is shown in the illustration. The process is in extensive use, the following being a few of the textile mills in which it is installed:



A COMPLETE FERROFIX BRAZING PLANT SHOWING CASTING PROPERLY SET UP AND KEROSENE TORCH FOR HEATING.

Ashley & Bailey Co., Paterson, N. J.

Morris & Co., Groveville, N. J.

United Piece Dye Works, Lodi, N. J.

Scotland Neck Cotton Mills, Scotland Neck, N. C.

Roanoke Mills Co., Roanoke, N. C.

Edenton Cotton Mills, Edenton, N. C.

Elizabeth City Cotton Mills, Elizabeth City, N. C.

Fountain Cotton Mills, Tarboro, N. C.

Rosemary Mfg. Co., Roanoke Rapids, N. C.

Kinston Cotton Mills, Kinston, N. C.

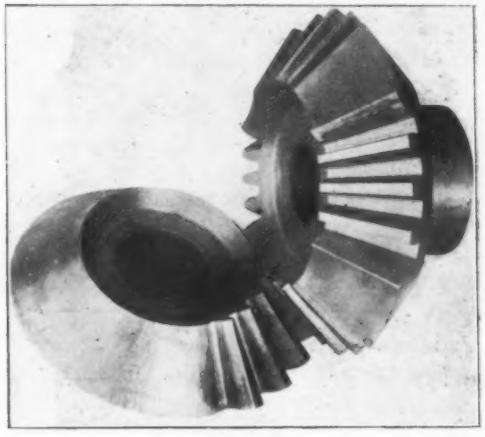
Commonwealth Cotton Mfg. Co., Durham, N. C.

Erwin Cotton Mills Co., Durham, N. C.

GEARS AND GEARING.

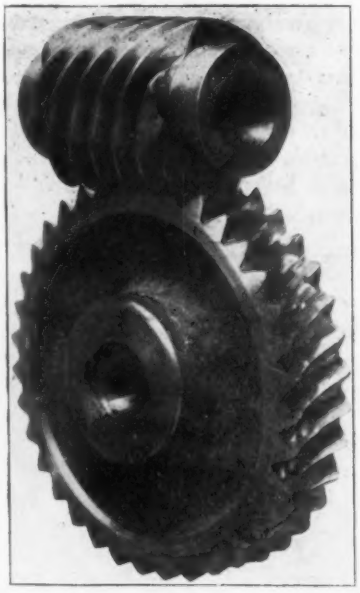
The president of the Philadelphia Gear Works, George B. Grant, has been identified with the manufacture of gears for the last thirty years, a period of remarkable development in that trade. When Mr. Grant started in the business iron gears with wooden teeth were in common use, and the power was knocked, as it were, from one shaft to another. The cast gear was also used and some of them gave fairly good results. Since then the business has been revolutionized by the cut gear, which is to the old style gear what a ground steel ball is to a cobblestone. Identified with the gear industry during a very important period of its development, the managers of the Philadelphia Gear Works are justified in saying, "We were pioneers in gearing; we are now old settlers."

The Philadelphia works manufacture practically all kinds of gears, including spur,



AN INTERMITTENT MITER GEAR.

bevel, miter, and worm gears, these being subdivided into the following classes: internal, external, spiral, helical, intermittent and elliptic. We show illustrations of the intermittent miter gear and of a 6-thread worm and worm gear. They manufacture all gears of cast iron, steel, aluminum, brass, silver, fiber and rawhide to suit the work to be done. Their long experience enables them to give valuable advice and suggestions regarding the kind of gears to be adopted for any special purpose. In installing gearing it should be borne in mind that large gears make less noise than small ones at the same surface speed. Small gears give a succession of blows, no matter how accurately they may be cut. To overcome this rawhide and



A SIX-THREAD WORM AND WORM GEAR.

fiber pinions are extensively used with good results. For many purposes the worm and worm gear drive is necessary. Intermittent gears are made either in the bevel and spur style, while internal gears are often used to economize space and can be made intermittent if desired. The elliptic gears give a variable motion such as a slow drive and a quick return. These gears, however, are expensive and should be used only for special requirements when their use is unavoidable. The old standby, however, is the spur gear, which is used in the great majority of cases. Whatever gear may be demanded the Philadelphia Gear Works are prepared to suit the requirements, and they invite correspondence from gear users.

Augusta is the largest cotton manufacturing city in the Southern States.

THE COLUMBIA PROTECTOR FOR HAND JOINTERS.

The large number of accidents, many of them very serious, that have occurred in the operation of hand jointers in wood working shops has led to the invention of the Columbia protector, manufactured by Fred W. Hall, Merchantville, N. Y. When unprotected the jointer or buzz planer, as it is sometimes called, is probably the most dangerous of wood working tools. While most of the accidents occur while the machine is being operated by unskilled men, yet it frequently happens that skilled men of long experience are injured by coming in contact with the knife.

The Columbia protector, shown at Figs. 1 and 2, automatically adjusts itself to plank from six inches thick down to the thinnest handled. It moves in and out on the top of the jointer to suit the position of the fence, which can be set at any angle desired without affecting the guard. The lid of the guard is supported over the knives and is equipped with a spring finger, which holds the stock firmly to the table, thus relieving the operator of the dangerous necessity of holding it with his hand. If the lumber kicks back causing the operator to fall toward the

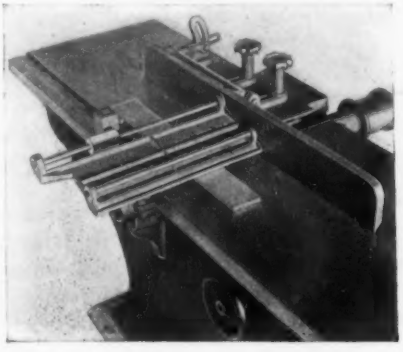


FIG. 1.

knives, the lid automatically drops to the top of the table, preventing the operator's hands from coming in contact with the cutter. A roller on the end of the spring finger and another on the under part of the lid, prevent friction. When one piece of stock is pushed through the machine after another, the lid is set to correspond to the height and then the work proceeds continuously, without danger to the operator.

Among the many wood-working shops

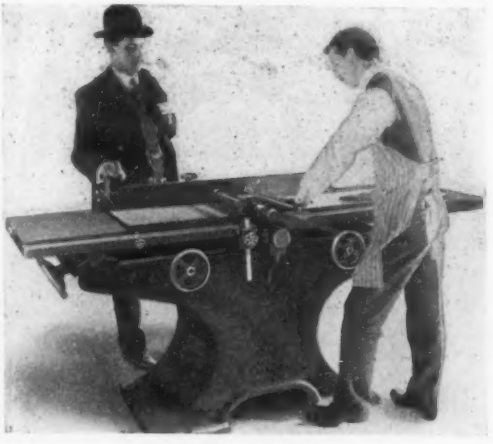
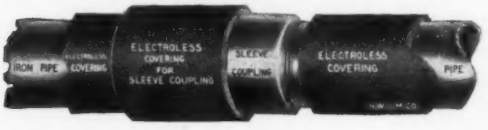


FIG. 2.

using the Columbia protector is that of the Standard Silk Mills, Phillipsburg, N. J., the manager of which has given the device a thorough test and speaks highly of its merits.

ELECTROLESS PIPE COVERING.

This covering, manufactured by the H. W. Johns-Manville Co., 100 William Street, New York, is the direct outgrowth of the demand for a preventive of electrolysis in underground pipes. It is a sectional covering of a specially prepared asbestos paper in laminated form, thoroughly impregnated,



and coated with a high grade water-proof insulating compound, which presents an effective barrier to the transmission of electric current. It is claimed that this covering acts as an insulating medium between the pipe and ground, and, being made of indestructible materials, is permanently dur-

able and has a lasting efficiency.

Electroless pipe covering is 1/4 to 3/8 inch thick, and is furnished in 3 feet sections, to fit various sizes of iron and lead pipes. All longitudinal and abutting joints are securely sealed by means of strips and insulating cement, which are furnished with the covering. For sleeve couplings, etc., a special sleeve of electroless pipe covering is provided.

When an electric current is grounded in order to return it to the power station it invariably follows the path of least resistance; it will frequently jump from the rails to a pipe buried nearby, particularly if the connections or bonds between the rails are defective, or if the soil between the rails and pipe is sufficiently damp or wet to offer a path of less resistance. In either event it will flow through the pipe until it strikes a section where the pipe—probably because of surrounding dry earth or the proximity of another pipe—offers greater resistance than some other route, when it will leave the pipe and take its way along the easier path.

Wherever the current leaves the pipe, it carries with it minute particles of metal of which the pipe is composed and deposits them elsewhere, in a similar manner to the process of electroplating. The continuance of this operation soon robs the pipe—at the point where the current departs—of its metallic elements, and leaves only a fragile carbon composition which is soft and spongy like graphite. This weakening soon causes a break, and the pipe is quickly rendered unfit for use, necessitating its replacement.

This corrosion and disintegration of the pipe is due to electrolysis, and the damage is so subtle and insidious, and so certain and widely extended that it results in a loss of thousands upon thousands of dollars in underground pipes every year.

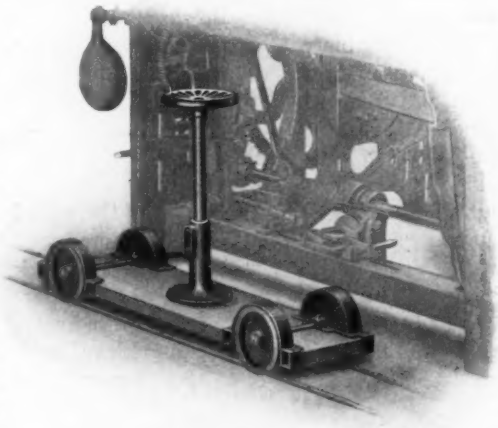
It is this loss which the electroless pipe covering is intended to prevent. Further information can be obtained on application to the manufacturers.

In 106 years, according to the Bureau of Statistics, the production of cotton in this country has increased from 155,556 bales to 11,345,988 bales.

A WEAVER'S SEAT.

From "Cotton Chats."

While it has been believed for some years that good weavers would be able to run 50 Northrop looms each, it will probably not be generally done until some way is found to relieve the weaver of the extra exercise taken in covering so much space. The actual hand operations necessary in running 50 looms are not beyond the capability of an expert weaver if the warps are well made and well sized; neither is the operation of putting in bobbins or drawing the warp necessarily fatiguing. The walking, however,



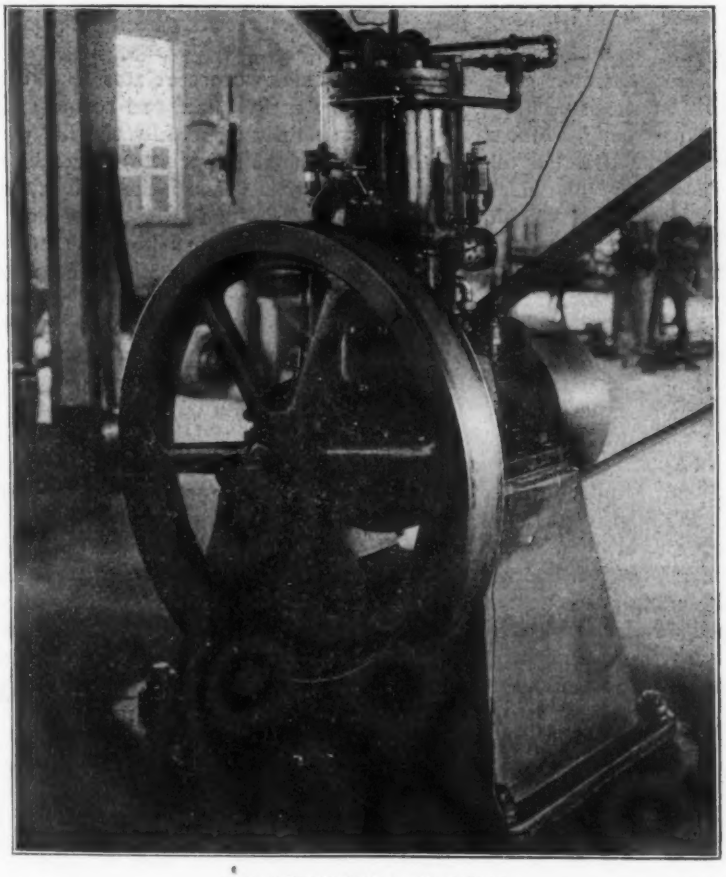
A WEAVER'S SEAT.

does become exhausting beyond a certain limit and though some weavers have run 36 and 40 looms each the average number is considerably less.

The Draper Company have patented a weaver's seat, which rolls on rails in the alley between the looms. A slight push sends the seat a considerable distance, and the weaver is also assisted in taking cloth from the looms to the end of the alley, as the platform to which the wheels are attached is large enough to carry an extra burden. This seat is sold practically at cost to all users of the Northrop looms. The price is $10 for the seat and five cents a running foot for each rail. Further information regarding these seats may be obtained on application to the Draper Co., Hopedale, Mass.

THE INTERNATIONAL OIL ENGINE.

This engine is built by the International Oil Engine Co., with main office and works at Danielson, Conn., and selling office at 38 Murray Street, New York, and offers many points of advantage to users of power in amounts varying from 1 1/2 to 35 h. p. The principle and operation of the engine are both simple and easily understood. In operation the air necessary for mixture with the oil for a charge, is taken into the cylinder under the piston, as it is at the extreme end of its up stroke. The piston on its downward stroke closes this air port, and slightly compresses the air in the crank case, from which it passes up through the transfer air box and mixes with the oil as it enters at the upper end of this box. This mixture of air and oil is then atomized into the cylinder, and is here diverted upward against the heated surface of the ignition chamber by the deflector plate on the top of the piston. This deflector is intended merely to prevent the incoming charge of fresh gas from traveling directly across the firing chamber and escaping through the exhaust port, which is opposite.



THE INTERNATIONAL OIL ENGINE.

To secure a proper temperature in the ignition chamber to convert the charge of air and oil into gas, we apply the flame of a kerosene torch to the ignition tube, which extends out from the head of the engine, or by an electric spark when preferred. When the charge is received into the cylinder the heat immediately converts it into gas, and the piston on its up stroke compresses this

gas and explodes it. This ignition produces a powerful expansion of the gas by reason of the heat evolved. A powerful impulse is given the piston and the downward stroke results. As the piston passes down in the cylinder, it opens the exhaust port, and the exhaust gases pass out, leaving the ignition chamber perfectly clean and free from carbon deposit.

The oil and air are mixed and admitted through one port. This makes it unnecessary to have an ignition chamber with a much larger area than is necessary for the work intended and which results after a few explosions in having the chamber filled with a large amount of exhaust gas which is detrimental to the formation of the pure gas to be exploded. The International engine is equipped with a very sensitive governor operated by centrifugal force and ensuring very uniform speed. The engine is simple in design, reducing the liability to get out of order to a minimum, the parts are readily accessible, the ignition is positive, the engine runs quietly, and is durable and economical in the use of fuel. It is always ready when fuel is at hand, and requires no expert mechanical skill to operate; a few simple instructions, thoroughly understood being enough to enable one of average intelligence to run the engine satisfactorily. Once started and fairly under way, it practically takes care of itself, using fuel in proportion to its load, and requiring no particular attention, other than starting, stopping and oiling.

Further information regarding this engine may be obtained on application to the manufacturers at their Danielson or New York City offices.

DYEING FELTED GOODS.

A process for dyeing felts and felted woolen goods, the object of which is to make the color penetrate to the center of the fabric, has recently been proposed by a German dyer. The goods are saturated with the dye solution by running them through a padding or similar machine. They are then extracted, causing the solution to reach every fiber in the fabric. The real dyeing process now begins by boiling the goods in an ordinary dyeing machine. It is said that the process gives very good results in dyeing felts and hard felted fabrics.—Oesterreich's Wollen und Leinen-Industrie.

FIREPROOFING TEXTILES.

An English process for fireproofing textiles has recently been patented in this country.

This process relates to the treatment of raw cotton, flax, and cotton and linen goods generally (especially the fluffy cotton goods known as flannelette) to render them less inflammable than hitherto by fixing an insoluble compound in the fibres of the material, so that they can be repeatedly washed and still retain their resistance to ignition.

The goods are treated with a stannate of soda solution of 1.100 specific gravity and are then dried and afterward treated with a bath made up of equal parts of tungstate of soda solution of 1.300 specific gravity, and of ammonium chloride solution of 1.050 specific gravity and one part of ammonia solution of .800 specific gravity. The goods are then dried, or dried and steamed.

Another method is as follows: The goods are treated with a stannate of soda solution of 1.100 specific gravity and are then dried and afterward treated with a bath made up of seven parts of tungstate of soda solution of 1.300 specific gravity, three parts of acetic acid of 1.050 specific gravity and four parts of ammonium chloride solution of 1.050 specific gravity. The goods are then dried, or dried and steamed.

In treating woven goods it is better to remove the sizing before the treatment, but this is not essential.

Exports of underwear from Chemnitz to the United States during 1906 were valued at $173,193, an increase over the total for 1905 of $30,000, or 21 per cent.

In 1906 Chemnitz exported to the United States cotton gloves at a value of $1,764,401, silk gloves at $636,613, woolen gloves at $254,463, making a total of $2,655,462, and an increase of $1,055,010 over 1905.

Dyeing, Bleaching, Printing, Etc.

SOME DIFFICULTIES IN DYEING SLUBBING.

BY A YORKSHIREMAN.

(From the Dyer and Calico Printer.)

The worsted coating trade affords perhaps the best example that can be found of the merits and failings of individualism. Most of the firms in it attend to only part of the whole process. The wool may start in Bradford, where it will be scoured and combed. From here it may be sent to Halifax to be slubbing dyed, then back to Bradford to be re-combed, back again to Halifax for spinning (Halifax has a great and well-deserved reputation for botany, slubbing, dyeing and spinning,) and then to Huddersfield for weaving and finishing. Because of this specialization, each of these processes is done with an excellence which, we believe, is unapproached by any foreign country, and probably could not be attained by any one firm attempting all the processes.

Still, it is very costly, and an outsider might account for this by the great number of separate establishments it passes through, and by the unavoidable expense in the wanderings of the material. These sources of expense, however, are minimized by the superior efficiency. A far more important cause of increase of cost lies in the fact that the different firms have given so much attention to their own processes that they have almost lost sight of the others, and consequently there is not the perfect dovetailing which could be wished. Undoubtedly the weakest point in the trade is in the relations between the dyers and the others. The comber, spinner and weaver do not feel quite lost among each other's machinery, and many men understand two, and a few all three, of these branches. But a man brought up among combs, or frames, or looms, seems to feel out of his element in a dyehouse.

In the technical schools, spinning students often take one or two courses in weaving, and vice versa, but very seldom study dyeing. We do know of one case where the same student has taken four City and Guild of London Institute's medals in wool and worsted spinning and weaving, wool dyeing and cotton dyeing. But this is very exceptional, and the student is a dyer by trade. We do not know of any spinning or weaving student achieving like success in dyeing.

Slubbing dyeing is expensive, but it could be cheapened with a little more understanding between the dyers and the rest, especially the spinners, as the dyer generally deals with the spinner. The dyer of course works for a profit and not for philanthropy, and in regulating his prices he has to take everything into account, among them the following items, which could be the subject of much better mutual arrangement than at present: 1. Size of lots; 2. Particularity in regard to matching; 3. Likelihood of ridiculous claims; 4. Class and number of colors. The dyer has to judge each customer separately on all these items and then quote accordingly. Let us discuss them more in detail.

SIZE OF LOTS.

It is much cheaper to dye large lots than small ones. The quantities of dye liquor, dyestuff, labor, steam, etc., are all relatively much less. Now a spinner can make hundreds of fancy yarns from a few standard colors. Black with white will easily give a range of six greys, with lavender another range of six other greys. A few browns, greens and navies will, in mixtures of two, give dozens of very distinct shades, and in mixtures of three will give hundreds. Some spinners will make these mixtures, and if the dyer submits a few colors which happen to be different from anything in use, and seem promising, they will order two or three packs to each shade. A firm which thus keeps its orders up to fairly large weights gets its prices accordingly.

In contrast to this there are firms who ask the dyer for scores of 4-oz. samples, and will pick from these and request 5-lb. lots, and will pick again from these and order 60

or 120 lbs. This can only be described as a ridiculous and expensive method, and is made still more absurd by the fact that they want the whole gamut of color, going over in sample lots every season, in order to be able to describe the shades as "absolutely new this season." The waste and cost of this sample business is enormous, and nine-tenths of it absolutely useless. What is the remedy? From the dyer's point of view it would seem to be simple enough—to lower prices by 1/2 cent per lb. on lots over 100 lb., and put them up 4 cts. and 6 cts. on lots under 120 lb. This would not alter his profits much, but it would greatly reduce his worry and would help towards cheapening the finished article. Why it has not been done is, we think due to the fact that trade relations are so "skeary" that the dyer is afraid to make a suggestion which might be taken the wrong way. Why the spinners have not tried to make some such terms is due to the ignorance aforementioned. As one dyer put it, they think dyeing is as easy as falling out of a tree and that 4 oz. can be dyed in a couple of minutes and 5 lb. in five minutes.

In the case of a large lot, done in several holefuls, this is an easy matter, because one holeful can be pulled up to shade with another, and indeed, this is the biggest factor in the cheapness of large lots. But in small, one holeful lots, matching is often the most expensive part of the business. A 100 lb. lot which at the finish will have had, say, 2 lb., 3 oz. of dye, will have had the 2 lb. put on first time, the other 3 oz. may take three times putting in. And if the dyer tries to hurry matters, and adds 2 1/4 lb. to the first bath the lot is spoiled, because the alizarines are so fast that there is no stripping them without injury to the fibre. On the other hand if he is too cautious the slubbing gets matted by long working. The smaller the lot the worse it is to judge and the sooner it mats. One ounce of dyestuff on a small lot has as much effect as a pound on a large lot, but naturally, it is easier to weigh correctly in pounds than in ounces.

In numerous instances, the matching off in small lots costs 6 cts. to 8 cts. per lb. and as this cannot be charged direct, it has simply to be made up in the price at which big lots are done. One great difficulty which the slubbing dyer has to face is that he cannot choose his dyes for good levelling properties; he is obliged to choose them for their fastness to milling and light. He must get his lots as level as the gingerly working of the material will allow. Very rarely is slubbing quite level—often it is the very reverse—and, to know just what the lot will gill up to, "pull ups" have to be taken. Bits are taken from various parts of the lot, dried, and passed five or six times through a gill box, the result being a sliver of solid, level color which is matched to. Getting these bits off while the lot is in the machine and saturated with boiling liquor is not an over-pleasant task nor one that, when the lot is uneven, can be performed to satisfaction, and often, after getting the wool out of the machine, wuzzing and drying, a fresh pull-up is different from that of the machine attendant. It is generally lighter, because the workman takes it from the handiest, i. e., the outside parts. If the lot is not as near to shade as the spinner desires, he may insist on it being redyed, or he may send a smaller lot to be used as correction.

If 300 lb. are off shade, the dyer may have another 100 lb. allowed to dye so as to correct the whole batch. If it is a brown requiring to be made bloomier, then the 100 lb. will be dyed well on the bloomy side of pattern. The spinner may insist on just 400 lb. being a perfect match, or he may have both lots delivered and then make the shade himself by mixing. The 300 may require only 75 of the 100, or the 100 may only pull up 275 of the 300. Whatever the proportions are, they can be found by weighing small mixings not aggregating more than four ounces—which is a much less costly process than the dyers "fiddling about" with the wool in boiling liquor, getting off bits and drying, gilling up and mixing up every half-hour. But while some spinners recognize that it pays to do things for themselves, and that hurrying the work through means saving time, money, and the good qualities of the material, there are others who are most awkward to deal with.

It has become the practice of late years to

demand "spinning samples." The dyer gets the lot as near as possible to the slubbing pattern, but the spinner asks for a few ounces of wool to spin and knit alongside a yarn pattern. It is unusual for a spinner to take less than half a day over this, and of course the dyer cannot leave the wool in the dye liquor. He must get it out and warehouse it, sometimes for a day or two, because if it is a fair match the spinner sometimes wishes to submit the knitting to his own customer, the manufacturer. In this matter the spinner is not wholly to blame, responsibility for the trouble having often to be carried back to the weaver. It has frequently happened in the writer's experience that the dyer has had lots hanging about for two months. If the weaver has not passed the knitting the spinner has sent the report on to the dyer, who has "cobbled" perhaps a quarter of the lot. Again the rigmarole has to be repeated, and perhaps another quarter has to be altered to enter again in another fresh dye liquor. Again perhaps an eighth, and so on. All this has to be reckoned in costing.

Our third item—likelihood of ridiculous claims—is a matter where the personal equation is important. Some firms try to get advantage out of the dyer at every turn, but this is a course of conduct which does not pay, and indeed, when a firm begins to get claim-mania, it always suggests one of two things—either that the firm is getting into low water and is trying to make up out of the dyer, or that some individuals are requiring palm oil. But there is still another reason for claims which the dyer must allow for. It is the fact, mentioned previously, that the dyer's art is so little understood by the others in the trade, and this leads these others to locate all defects in the terra incognita of the dye-house. Because of this ignorance the dyer often finds it difficult to prove his innocence.

Our last item—class and number of shades—has close connection with the previous ones. If standards are multiplied, the average weight per shade must be lowered, the skill and trouble in matching off, and the likelihood of difficulties in the finishing must increase. We noted how the spinner can make hundreds of fancy yarns from a few solid standards, and how the weaver can multiply these again. But some spinners have got the itch for variety. One season they want shades full of bloom, "brussen," as the expressive Yorkshireism has it. In navies, for example, the pure alizarines will not be half bloomy enough for them, and brighter but much less fast colors have to be salted in.

The dyer is sometimes at his wits' end to get these full shades fast against bleeding. But another season there may be a total change. Samples are requested having plenty of color down, but none through—"something soft," as one might say. And, in season and out of season, fresh colors are demanded. If any dyer can make a green with a pink bloom, he will have a fortune in his grasp. If he could produce a brown that looked blue in front and yellow behind, his name would go down to posterity. The dyer does his best, of course, and, after all, mankind has to be satisfied with something less than impossibility. But these fancy colors are more trouble than any others. They give least satisfactory results both as regards levelness and fastness. For over-checkings they may be made to pass muster, but when a spinner makes a mixture yarn with one of these fancy colors, he is doing a risky thing. A bright color gives such life to a mixture that there is great temptation to use it, but its fading has a very bad effect—out of all proportion to the quantity used. A mixture made of ten parts brown and one part bright blue which, on exposure, keeps its color in the brown but fades in the 1/11th part of blue has its general effect altered out of all proportion to the small amount of blue. Then the dyer is blamed and he has to give a scientific lecture to explain things.

Now, who should initiate the improvements which our article shows are so easy to introduce? The man who buys the suit is not the one that makes trouble, and if he is satisfied so is the tailor. The mischief really begins with the merchants, who have a very small idea of technical difficulties. In fact, the merchants often set up quite conventional requirements, and thus increase the difficulties of the practical men very unnecessarily. The manufacturers have the merchants' fads to bear at first hand, but they

pass them on, with little additions of their own, to the spinners, who in turn take it out of the dyer. So that in the merchants we find one great chance of improvement and economy. But the practical men could also do something. Collaboration among them, even if it fell short of such a strong combination as to dictate to the merchants, could do wonders. A little more study of each other's methods, a little more friendly consultation among themselves, a little less jealousy, a little more harmonious working together—all are wanted.

In the study of each other's methods, the technical schools could take a useful share. The evening classes are arranged in courses, and one subject—say spinning or weaving—is fairly well covered in about three or four years, the students spending three nights per week during the winter months. Generally one night per week is devoted to some subject having more or less indirect reference to the chief subject. Spinning students take up machine drawing, weaving students go in for design, and so on. We think it would be well if these extra nights were spent in studying the other branches of the trade. If we roughly divide the trade into spinning, weaving and dyeing, then no student should be considered to have mastered one division unless he knows something of the other two. It might be suggested that the students themselves could study the subjects allied to their own. But the point is—they do not. One of the reasons is that they do not see the real need for so doing. Neither have the school authorities seen this need, this pressing need, for more co-ordination. We have, however, ourselves drawn the attention of one head-master to the subject and are in hopes that at his school there may be some attempt in the direction indicated during next winter session.

Without a doubt more perfect collaboration could reduce the price of English worsted coatings 12 to 24 cents per yard. In other words, 12 to 24 cents per yard goes for unnecessary worry, trouble and faddiness.

Nearly all the Italian lace bought in American shops comes from Cantu, where about 7,000 persons are engaged in its production.

SODIUM PEROXIDE AND SOAP.

Two classes of peroxide are recognized in modern chemistry. One includes those which react with hydrochloric acid, and thereby evolve chlorine, and are insoluble in dilute acids, unless substances oxidizable by nascent oxygen are present. The other consists of those which form hydrogen peroxide in solution in acid. It includes sodium peroxide, now the most important of all these bodies from a technical point of view.

Sodium peroxide offers the bleaching properties of hydrogen peroxide in a very compact form. Every 23 lbs. of it is capable of yielding 10 lbs. of the hydrogen compound, and all of that can be utilized under suitable conditions. By mere solution in water it yields the bleaching agent, and to make the solution durable all that is required is to neutralize ths caustic soda formed at the same time. The liquid is then used for bleaching both vegetable and animal fibres in a feebly alkaline state.

The great drawback of sodium peroxide is its hygroscopicity, so that if it is not kept in air-tight vessels it absorbs water vapor from the atmosphere. Then the same action occurs as when it is dissolved in water, and without the cooling influence of large masses of that liquid. Hence if any oxidizable matter is present it is burnt, and enough heat is evolved to result often in very serious consequences. To remedy this difficulty a process has been devised which is the subject of a recent German patent.

According to this method the sale of the peroxide is combined with that of soap, etc. Cases are sold in pairs only. One of the two cases contains sodium peroxide diluted to a specified extent (so that there can be no mistake about prices) with inert substances, the other contains soap. As far as possible the quantities are adjusted in such a way that all the substances in both cases can be used together, while the admixture of inert bodies with the peroxide reduces the damage, in case of accident, simply to the loss of the peroxide in the case.—Dyer and Calico Printer.

DYEING SHADED EFFECTS.

The accompanying illustrations show a color-feeding attachment for dyeing and printing machines, invented in Germany and recently patented in this country. It is intended for the production of shaded effects and consists of a large tank divided by partition walls into as many subdivisions or compartments as there are divisions in the

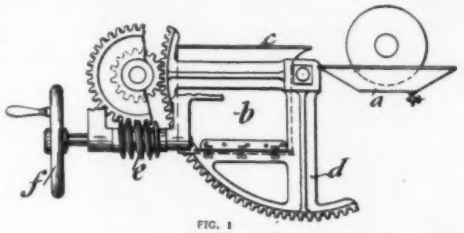


FIG. 1

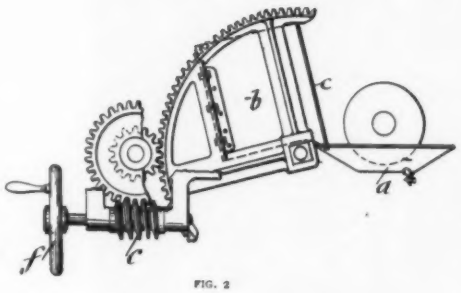


FIG. 2

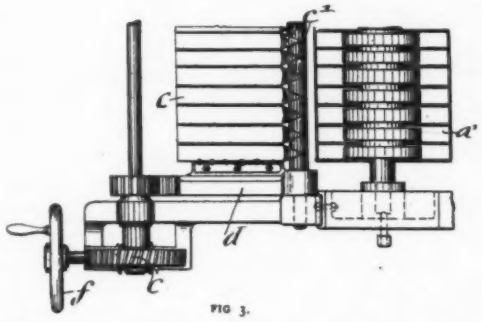


FIG 3.

color-trough, and means for raising or lowering the color-feeding receptacle so as to permit an intermittent supply of color to the different subdivisions of the color-trough of the transfer-roller and the continuous working of the dyeing or printing machine.

Fig. 1 is a side-elevation of the color-feeding attachment in its lower or normal position; Fig. 2 is a side-elevation showing device in raised position for supplying color to the subdivisions of the color-trough of the transfer-roller; and Fig. 3 is a plan-view of Fig. 1.

The color-trough, a, is divided into a number of subdivisions or compartments by transverse partition-walls, a^1, so as to supply colors of different shades or tints to a correspondingly-subdivided transfer-roller, a^2, located above the color-trough. The color-trough, a, is provided with drain-cocks for draining off the colors when the machine is not in use. Alongside of the color-trough, a, is arranged a color-feeding receptacle or tank, b, which is pivoted to the framework of the machine, and which is divided in the same manner as the color-trough by means of partition-walls, b^1, into a corresponding number of individual subdivisions or compartments, c, in line with the subdivisions of the trough. The upper edge of the supply-receptacle, b, is located at a higher level than the trough.

The individual compartments, c, of the tank, are from fifteen to twenty times larger than the corresponding subdivisions of the color-trough. The compartments of the color-feeding tank are of equal size and are provided at the upper edge, adjacent to the rear-edge of the color-trough, with tapering or tubular spouts, c^1. By raising or tilting the color-feeding tank on its pivot-shaft, the colors are fed from the compartments of the tank into the subdivisions of the color-trough.

The raising and lowering of the color-feeding receptacle is accomplished by swinging it on its pivot-shaft, s, which is supported in suitable journal-bearings of the dyeing or printing machines. To the pivot-shaft, s, is keyed the hub of a toothed segment, d, which meshes with a pinion, d^1, that is rotated by a worm-gear, e^1, which is keyed to the shaft of the pinion, d^1, and a worm, e, the latter being turned by means of a hand-wheel, f, that is keyed to the shaft, e^2, of the worm. The shaft is also supported in journal-bearings of the supporting-frame of the machine and rotated by the hand-wheel to the right or left. The color-feeding tank, b, is gradually raised from the position shown in Fig. 1 to that shown in Fig. 2, and then returned again into its lower position

to permit the refilling of the individual compartments.

By the color-feeding attachment fabrics that have to be dyed or printed in shaded colors or tints can be continuously supplied with the required colors by the transfer-roller, as the color-trough is always supplied with the colors from the tank so that the machine can be operated continuously, and any length dyed or printed by keeping the compartments supplied with the required quantity of color.

TREATMENT OF CHROME SORES.

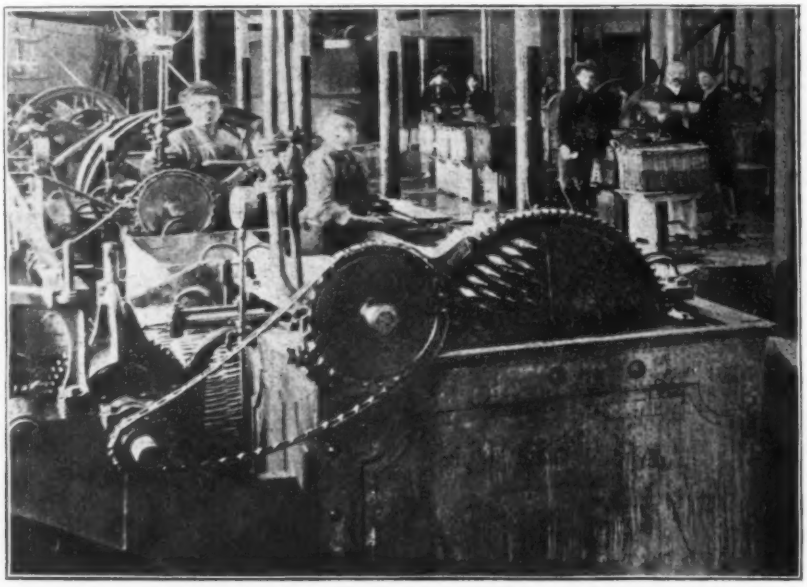
Chrome sores are produced by the introduction of chromates into scratches, etc., from which they often spread under the skin for a considerable distance. A watery excretion, generally more or less green, is usually present. By treatment with a 5 per cent. solution of sodium bisulphite the chromic acid is decomposed, and the sores quickly heal.—Jour. Soc. Chem. Ind.

In 1906 there were in operation in the United States 25,250,096 cotton spindles, which consumed 4,909,479 bales of cotton of 500 pounds each.

DYEING INDIGO BLUE ON COPS.

BY MARTIN COLE.

Cops cannot be dyed indigo by the mechanical methods used for other dyestuffs owing to the nature of the dye and the different treatment required. The cops must first be boiled to prepare them to receive the indigo dye. The dyeing with indigo is a cold process and consequently the dye does not penetrate the cops so easily. The same advantages are to be derived from the dyeing of cops indigo as from dyeing them in any other color, hence special efforts have been made to perfect machinery for this work.



DYEING INDIGO ON COPS.

An English machine for this work is shown in the illustration. The dye bath receives circular cop plates divided into four sections, each side of the plate being fitted to carry cops. The plate is slowly revolved and is so timed that while two sections are in the dye liquor another section is being extracted, while the fourth section having been already dyed is being replaced with others to be dyed. The machine works automatically, although it can be controlled by the attendant. The dyeing is under inspection and it is quite easy to change the cops and make additions to the dye liquor.

A DYEING FRAME.

A dyeing frame for coloring open fabrics such as chiffon, gauze, etc., in the piece is shown at Figs. 1 and 2. The inventor states that the apparatus at present in use for holding the fabric during the dyeing process has been found to be objectionable for several reasons, the principal one being that great care must be used or a uniform tension will not be maintained on all parts of the fabric; without a uniform tension, the delicate texture is spoiled or its value impaired.

A suitable frame, a, is made with the rectangular base, b, two pairs of uprights, c, at each side of the base, braces, d, connecting the uprights in each pair, and removable top-bars, e, connecting the front and back uprights, these being held in place by wing-nuts, f.

At the sides of the frame, a, are arranged trunnions, g, adapted to support the frame when it is introduced into the dye-tub, h, these trunnions resting in bearing blocks, i.

Bearing against the uprights are the holding-bars, k, for the fabric. Each holding-bar

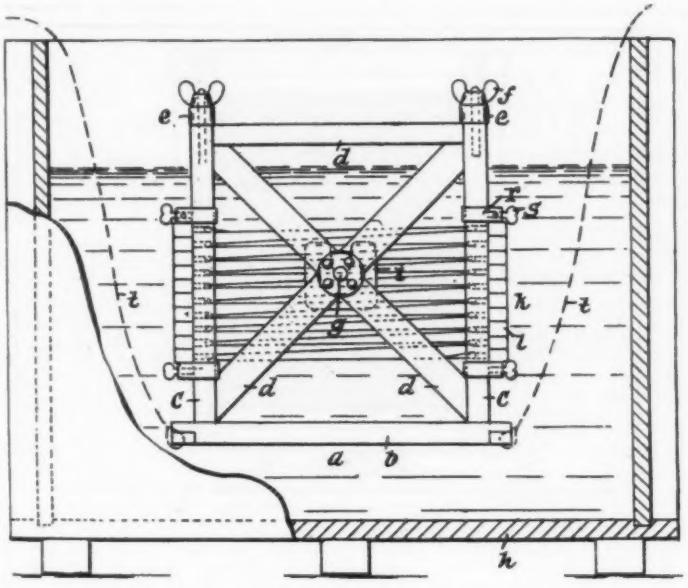


FIG. 1.

The object of this new machine is to hold the goods securely while undergoing the dyeing process.

The goods may be placed in the holding apparatus in a relatively large quantity and without requiring skilled labor or any great loss of time, and when so arranged they are in convenient form for introduction into a dye-tub and for such subsequent operation as the dyeing process requires.

In the accompanying drawings, Fig. 1 is a side view of the holding apparatus shown as arranged in the dye-tub, the inner wall of the latter being broken away; Fig. 2 is a top plan view of what is shown in Fig. 1.

consists of a wood or other suitable strip, l, having stout pegs, m, projecting from one side, one near each end, and a taut cord or wire, n, connecting the pegs.

The frame is made to accommodate as much of the material to be dyed as may be consistent with convenience in handling; the number of holding-bars, k, is determined by the quantity to be dyed. The holding-bars supporting the fabric are arranged as shown in Fig. 1. The operator first arranges the bars on a table or other support, alternate bars being inverted. The material is pinned or stitched temporarily around the cord of the furthermost holding-bar and then the

latter is removed to the frame, a, where, the top-bars having been first removed so as to permit the fabric to enter the frame, the holding-bar is arranged against the further pair of uprights with its pegs projecting inwardly, as shown in Fig. 1. The next holding-bar is now brought to the frame and arranged in a similar manner with respect to the other two uprights, and so on until the last holding-bar has been arranged in the frame, when the end of the goods is pinned or stitched to the cord or wire. The top-bars may now be replaced.

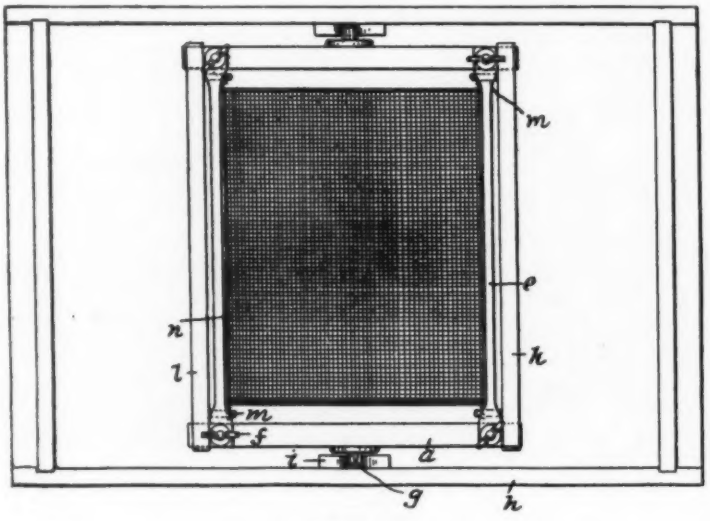


FIG. 2.

In order to provide for accommodating more or less of the holding-bars in the frame as required, clips, r, arranged to slide vertically on the uprights, c, and having thumb-screws, s, for securing them where adjusted, may be provided, each two pairs of clips receiving between them the corresponding series of holding-bars and thus securing them against free movement. By vertically adjusting the clips the goods may be arranged at any elevation in the frame.

When the goods have been arranged in the frame in the manner described, the whole is placed in the dye-tub with the trunnions, g, journaled in the bearing blocks. The frame is then rotated or oscillated to cause the dye to impregnate the goods.

When the dyeing operation has been completed and the frame removed from the dye-tub, the goods may be quickly detached by simply cutting the cords, n, which leaves the goods in convenient folds, flat and regular, ready to be wound on a beam.

Color Cards.

Immedial Yellow Olive G; Cassella Color Co., New York City.

A folder showing a wide range of shades on cotton yarn, loose cotton and piece goods produced with Immedial Yellow Olive G. Six of the samples show khaki shades.

Immedial Prune S; Cassella Color Co., New York City.

A folder showing 3 and 6 per cent. dyeings of Immedial Prune S on raw cotton, cotton yarn and piece goods.

Brilliant Benzo Violet; Continental Color & Chemical Co., New York.

Four samples of mercerized cotton yarn showing 1 1/2 and 2 per cent. dyeings of Brilliant Benzo Violet B, and 2R, for which full working directions are given.

Acid Chrome Black R H N; Continental Color & Chemical Co., New York.

A folder showing a 5 per cent. shade of Acid Chrome Black R H N on worsted yarn, and a 4 per cent. dyeing on men's suiting in which the white checking thread is not tinged with the dye.

Milling Red; Berlin Aniline Works, New York City.

A folder containing samples of woolen yarn showing 3 per cent. dyeings of Milling Red 6BA, 4BA and GA. Full working directions are given.

Fashionable Shades for 1907-8; Cassella Color Co., New York City.

A folder with 180 samples of woolen piece goods showing as many different shades produced with the dyes of the Cassella Color Co. Eighteen of the samples have cotton effect threads that are not colored by the dyes.

Fashionable Shades; Cassella Color Co., New York City.

A folder with 24 samples of ladies' costume cloths and men's suitings dyed with various shades of the Cassella Color Co., for which full working directions are given. Several of the samples show cotton effect threads not colored by the dyes.

Cotton Print Effects; Cassella Color Co., New York City.

Bulletin No. 117, showing print effects fast to light on cotton piece goods obtained with the Diamine colors. Full directions for preparing the paste and copper solutions are given.

Oxy Chlorazol Blue, 6B; Read Holliday & Sons, Ltd., New York.

Seventeen samples of yarn and piece goods showing the shade of Oxy Chlorazol Blue 6B, as applied to cotton, linen and cotton and wool unions.

Dianil Chrome Brown; H. A. Metz & Co., New York City.

Eight samples of raw cotton, cotton yarn and piece goods showing 3 per cent. dyeings of Dianil Chrome Brown G and R, for which full working directions are given. Two of the samples show the effects obtained by after treatment with chrome and bluestone.

Thiogene Navy Blue R Conc.; H. A. Metz & Co., New York City.

Ten samples of cotton yarn and piece goods showing the shades produced with various percentages of Thiogene Navy Blue R Conc., for which full working directions are given. Two of the samples were dyed in a jigger and two in a box with rollers.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 129.

Blue on Cotton Yarn.

Oxy Chlorazol Blue B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Oxy Chlorazol Blue B.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)

Glauber's or common salt may be added, but no alkali or soap can be used.

Oxy Chlorazol Blue B is extremely useful in dyeing wool and cotton union goods. At the boil the wool is more deeply covered; at 140° F. the cotton is more deeply covered; at 185° F. the best result is obtained. It is moderately fast to light and washing, and has very good calendering and leveling properties. It may be discharged white with a chlorate or hydrosulphite discharge.

Recipe No. 130.

Yellow on Cotton Yarn.

Tetrazo Yellow M on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Tetrazo Yellow M.
(American Dyewood Co., 154 William St., New York.)
20 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Tetrazo Yellow M gives shades of excellent fastness to light, good fastness to acids, and moderate fastness to washing. It is of interest for union dyeing as it gives uniform shades to both cotton and wool.

Recipe No. 131.

Blue on Worsted Yarn.

Anthracene Acid Blue B B N on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Anthracene Acid Blue B B N.
(Cassella Color Co., 182 Front St., New York.)
3 lbs. Acetic Acid.

After boiling 1/2 hour, add

3 lbs. Sulphuric Acid

and boil 3/4 of an hour to exhaust the dye bath. Then aftertreat for one hour in a bath made up with

2 lbs. Potassium Bichromate.

Anthracene Acid Blue B B N will be found to give an excellent and fast shade of blue upon wool material.

Recipe No. 132.

Green on Cotton Yarn.

Naphtamine Fast Green G on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Naphtamine Fast Green G.
(Kalle & Co., 530 Canal St., New York.)
30 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Then diazotize by working for 1/2 hour in a cold bath made up with

2½ lbs. Sodium Nitrite.
7½ lbs. Hydrochloric Acid.

Work for 1/2 hour in a cold bath made up by dissolving

1¼ lbs. Developer L.

in a solution containing

5 ozs. Caustic Soda.

It is best to dissolve the Developer L in a small vessel containing the necessary amount of caustic soda, rather than to add the caustic soda to the dyebath first.

Naphtamine Fast Green G gives dyeings possessing good brilliancy and excellent fastness to cross dyeing.

Recipe No. 133.

Black on Worsted Yarn.

Amine Black 4 B G on 100 lbs. worsted yarn. Prepare the dye bath with

6 lbs. Amine Black 4 B G.
(Berlin Aniline Works, 213 Water St., New York.)
3 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 150° F. and dye at a boil for one hour.

Amine Black 4 B G possesses excellent fastness to light and good leveling properties.

Recipe No. 134.

Brown on Cotton Yarn.

Paranol Brown R on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Paranol Brown R.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston.)
10 lbs. Common Salt.

Dye at a boil for one hour.

Paranol Brown R possesses good fastness to light and washing, dyes very level, and works well in combination with other direct cotton colors.

Recipe No. 135.

Red on Worsted Yarn.

Alizarine Fuchsine R D Paste on 100 lbs. worsted yarn. Prepare the dye bath with

10 lbs. Alizarine Fuchsine R D Paste.
(Continental Color & Chemical Co., 128 Duane St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 140° F., bring slowly to a boil, and dye at a boiling temperature for one hour.

It is best to add the acid in separate portions, or begin the dyeing with acetic acid and finish with sulphuric acid.

Alizarine Fuchsine R D Paste will be found a valuable color in wool printing. This color is distinguished by its easy solubility, and when printed possesses excellent fastness to light and washing.

Recipe No. 136.

Blue on Worsted Yarn.

Alizarine Blue 5 R on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate,
2 lbs. Tartar,

entering yarn at 120° F. and mordanting at a boil for 1 1/2 hours. Wash, and then dye in a bath made up with

1½ lbs. Alizarine Blue 5 R.
(C. Bischoff & Co., 451 Washington St., New York.)
1 lb. Acetic Acid.

Note:—Alizarine Blue 5 R must be dissolved in luke warm water.

Dye at a boil for one hour and then exhaust color from the bath by the addition of

4 lbs. Acetic Acid.

Alizarine Blue 5 R applied in this manner gives a desirable shade of blue which possesses excellent fastness.

Recipe No. 137.

Red on Cotton Yarn.

Compound Shade (Brilliant Phosphine 5 G. Rhodamine 6 G Extra) on 100 lbs. cotton yarn. First mordant the yarn by working in a bath containing

2½ lbs. Tannic Acid

at a temperature of 180° F. for 1/2 hour, and then allow to steep in the gradually cooling bath for several hours, or over night. Squeeze, without washing, and work for 1/2 hour in a bath containing

2 lbs. Tartar Emetic.

Wash, and dye in a bath made up with

1 lb. Brilliant Phosphine 5 G.
1 lb. Rhodamine 6 G Extra.
(A. Klipstein & Co., 122 Pearl St., New York.)
2 lbs. Alum.
10 lbs. Glauber's Salt.

Dye at a temperature between 150-160° F. for one hour. Wash and dry.

This compound shade is exceedingly fast to alkalies and washing, and also to acid, and is suitable for the dyeing of yarn for cross dyeing purposes.

Recipe No. 138.

Green on Cotton Yarn.

Naphtamine Fast Green Y on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Naphtamine Fast Green Y.
(Kalle & Co., 530 Canal St., New York.)
30 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Then diazotize by working for 1/2 hour in a cold bath made up with

2½ lbs. Sodium Nitrite.
7½ lbs. Hydrochloric Acid.

Work for 1/2 hour in a cold bath made up by dissolving

1¼ lbs. Developer L

in a solution containing

5 ozs. Caustic Soda.

It is best to dissolve the Developer L in a small vessel containing the necessary amount of caustic soda, rather than to add the caustic soda to the dye bath first.

Naphtamine Fast Green Y gives dyeings possessing good brilliancy and excellent fastness to cross dyeing.

Recipe No. 139.

Blue on Union Cloth.

Union Blue 8933 on 100 lbs. cotton and wool union cloth. Prepare the dye bath with

3 lbs. Union Blue 8933.
(W. F. Sykes & Co., 85 Water St., New York.)
25 lbs. Common Salt.

Enter at 140° F., bring slowly to a boil, taking at least 3/4 of an hour for doing so. Boil 1/4 of an hour, and then allow the material to steep in the gradually cooling bath for one hour.

Recipe No. 140.

Blue on Cotton Yarn.

Oxy Chlorazol Blue 3 B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs Oxy Chlorazol Blue 3 B.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)

Glauber's or common salt may be added, but no alkali or soap can be used.

Oxy Chlorazol Blue 3 B is extremely useful in dyeing wool and cotton union goods. At the boil the wool is more deeply covered; at 140° F. the cotton is more deeply covered; at 185° F. the best result is obtained. It is moderately fast to light and washing, and has very good calendering and leveling properties. It may be discharged white with a chlorate or hydrosulphite discharge.

Recipe No. 141.

Blue on Cotton Yarn.

Oxy Chlorazol Blue 6 B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Oxy Chlorazol Blue 6 B.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)

Glauber's or common salt may be added, but no alkali or soap can be used.

Oxy Chlorazol Blue 6 B is extremely useful in dyeing wool and cotton union goods. At the boil the wool is more deeply covered; at 140° F. the cotton is more deeply covered; at 185° F. the best result is obtained. It is moderately fast to light and washing, and has very good calendering and leveling properties. It may be discharged white with a chlorate or hydrosulphite discharge.

Recipe No. 142.

Dark Blue on Worsted Yarn.

Hematol Paste on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

2½ lbs. Potassium Bichromate.
2½ lbs. Oxalic Acid.
2 lbs. Tartar.

Enter at 140° F. and mordant at a boil for 1 1/2 hours. Wash, and then dye the mordanted material, at a boil, for 1 1/2 hours in a bath made up with

10 lbs. Hematol Paste.
(W. F. Sykes & Co., 85 Water St., New York.)
⅛ lb. Sulphuric Acid.

Hematol Paste when applied in this way gives an excellent dyeing of a heavy blue black.

Recipe No. 143.

Purple on Worsted Yarn.

Alizarine Irisole D Paste on 100 lbs. worsted yarn. Prepare the dye bath with

10 lbs. Alizarine Irisole D Paste.
(Continental Color & Chemical Co., 128 Duane St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 140° F., bring slowly to a boil and dye at a boiling temperature for one hour.

It is best to add the acid in separate portions, or begin the dyeing with acetic acid and finish with sulphuric acid.

Alizarine Irisole D Paste will be found a valuable color in wool printing. This color is distinguished by its easy solubility, and when printed possesses excellent fastness to light and washing.

Recipe No. 144.

Grey on Cotton Yarn.

Diamine Fast Grey R N on 100 lbs. cotton yarn Prepare the dye bath with

1½ lbs. Diamine Fast Grey R N.
(Cassella Color Co., 182 Front St., New York.)
20 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Diamine Fast Grey R N will be found to give an excellent shade of grey on cotton material.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Georgia, Atlanta. The officers of the newly organized National Duck Mills are George P. Howard, president and treasurer; W. L. Beyer, secretary and general manager and James Escott, vice president and superintendent. The plant of the Southern Rug & Carpet Co., of Atlanta, has been secured and 76 looms are now being installed. From 22 to 114-inch duck will be woven, and it is expected that operations will begin by the middle of September. For the present all yarn will be bought, but the plant will eventually equip a 5,000-spindle mill.

*Georgia, Douglasville. The Lois Cotton Mills have been organized with a capital of $200,000. Ten thousand spindles will be installed for the manufacture of cotton yarns, and possibly cloth. J. M. Gear is president, M. E. Gear, vice president and J. T. Duncan, secretary.

*Georgia, Junction City. We have been advised that the proposed mill at this place will be capitalized at $500,000. The production of goods is expected to begin about June, 1909. Nothing has been done toward the construction of the plant up to this time. $125,000 has been subscribed. J. W. Cheatham, Broxton, Ga., and C. F. Reynolds, Paschal, Ga., are interested in the project.

*Georgia, Sparta. Work has just started on the buildings for the Sparta Cotton Mills. This company is capitalized at $100,000. W. T. Bryan is president, and E. A. Rozier, treasurer. When completed the mill will have 5,000 spindles and will make 16s to 24s yarns. They are in the market for a 250 h. p. engine with complete steam plant. W. T. Bryan of Athens, Ga., is buyer.

*Georgia, West Point. Construction has been started on the West Point Manufacturing Co.'s new mill.

*Massachusetts, Fall River. Construction work is started on the new mill for the Moore Web Co., in which Geo. C. Moore is interested. It is expected that the mill will be completed and the production of goods begin about November 1. Twenty-four looms will be installed for the manufacture of fine silk and cotton elastic webs. Steam power will be used.

*Massachusetts, Fitchburg. The Fitchburg Yarn Co. is installing machinery in its new mills.

New York, Amsterdam. C. W. Becker has formed a company to manufacture hosiery yarns. The capital will be $125,000 and equipment 5,000 spindles.

*North Carolina, Davidson. Officers of the Delburg Cotton Mills have been elected as follows: J. P. Munroe, president, and F. J. Knox, treasurer. Mr. Munroe, Mr. Knox, W. J. Martin, A. B. Young and W. R. Gray are the directors.

*North Carolina, Davidson. The De Long Cotton Mills, which was recently incorporated with a capital of $100,000, will build a 2,500-spindle mill at this place.

*North Carolina, East Monbo. The Turner Mills, recently incorporated, have a capital stock of $250,000. A mill will be built as soon as plans and specifications can be prepared, and it is expected operations will begin by September, 1908. Yarns from 12s to 30s will be manufactured. The equipment will be between 6,000 and 10,000 spindles. C. H. Lestin is superintendent of construction. At present the post office address is Statesville, North Carolina.

North Carolina, Glen Alpine. It is reported that a company is being organized to build a cotton mill in this place. J. T. Pitts is reported as interested.

*North Carolina, Lenoir. The Moore Cotton Mill Company has been incorporated with a capital stock of $150,000 by H. P. Moore, M. G. Shearer, J. N. Bernhardt, J. Seamore and E. P. Moore. 40s to 60s cotton yarn will be manufactured.

*North Carolina, Rockwell. The Barringer Mfg. Company has been incorporated with a capital stock of $150,000. Paul Barringer will be president. Mr. Barringer, J. W. Cannon, C. M. Poole and others are the incorporators. A site has been purchased and a 5,000 spindle plant will be erected. At first 2/30s yarn will be made. Later cloth will be manufactured.

*North Carolina, St. Pauls. L. Shaw has been elected president of the St. Paul's Cotton Mill recently reported incorporated. J. M. Butler has been elected vice president and A. R. McEachern, secretary and treasurer.

North Carolina, Shelby. The Illa Mfg. Co. has been organized with a capital stock of $150,000. S. H. Hamrick, J. R. Dover and others are the incorporators.

*North Carolina, Taylorsville. The new buildings of the Taylorsville Cotton Mills will consist of a main building 235 by 75 feet; a boiler and engine house, 50 by 40 feet; and a warehouse, 100 by 50 feet. The equipment will consist of 5,000 spindles and hosiery yarns will be manufactured.

North Carolina, Weldon. The Shaw Cotton Mill has been incorporated with a capital stock of $100,000. W. T. Shaw, W. A. Pierce and others are the incorporators.

Pennsylvania, Philadelphia. An application for a charter has been made for the J. Milton Hagy Waste Works with the following persons as incorporators: E. H. Sagendorph, M. C. Hays and E. C. Mackeown. The company, which has had an office in the Bourse Bldg. and a factory and warehouse at 23d and Arch Sts., have recently re-

moved the plant to 316 S. Lawrence St., where it is now located.

*South Carolina, Chapin. The Chapin Mfg. Co. has been organized with a capital stock of $60,000. This is the company in which J. J. Blackwelder was reported as interested. Yarns will be manufactured.

*South Carolina, Encoree. It is reported that the mill in which W. S. Gray & Sons of Woodruff have been mentioned as interested, will be built at this place. Plans are for a 4-story building, 75 by 325 feet.

*South Carolina, Gaffney. We have been advised that the Merrimac Mills expect to begin operations about the first of January, on fine wide print cloths. The mill is now under construction. The capital stock is $150,000. Ten thousand spindles and 300 looms will be installed. W. C. Hamrick is president and treasurer, and E. R. Cash, general manager.

South Carolina, Spartanburg. Elisha Bomar is organizing a company for the purpose of starting a $200,000 cotton yarn mill.

*Virginia, Strasburg. Equipment is now being installed in the Strasburg Textile Mfg. Company's plant.

Enlargements and Improvements.

Alabama, Anniston. A brick addition, 50 by 60 feet, one story high, will be built to the Anniston Manufacturing Co.'s plant.

*Alabama, Florence. The Cherry Cotton Mills have awarded contract for new machinery to be installed in their plant.

*Canada, Nova Scotia, Yarmouth. We have been advised by the Cosmos Cotton Company that they are working on a new mill, and that the machinery is being imported from the United States and England. This company manufactures cotton dress goods of all kinds and also sail and wrapping twines.

Connecticut, Wauregan. The Wauregan Co. is installing 1,680 new spindles.

*Connecticut, Willimantic. The second addition being built by the Windham Mfg. Co. is a continuation of the first. The machinery equipment has been contracted for.

*Georgia, Athens. The addition to be built to the Southern Mfg. Company will be 350 by 100 feet. 200 new looms in addition to those run now will be installed in the new building.

*Kentucky, Paducah. We have been advised by the Cohankus Mfg. Company that changes in their equipment consist of substituting mule spindles for ring spindles. 1,700 mule spindles will be added.

*Maine, Saco. It is reported that the York Mfg. Co. will increase its capital stock $600,000. Extensive improvements are being made to the plant.

*Massachusetts, Fall River. The Massasoit Mfg. Co., reported enlarging their buildings, advise us that addition is being made to their annex plant on Pocasset St.

Massachusetts, Fall River. The Seaconnet Mills have added 3,100 spindles to their equipment.

Massachusetts, Fitchburg. An addition is being built to the Nockege Mill to enlarge the weaving department. The building will be 100 by 100 feet and two stories high.

*Massachusetts, Lawrence. The foundations are being put in for the new weaving mill of the Atlantic Cotton Mills. We have been advised that the building will be 300 by 70 feet, 2 stories and basement and when completed looms will be installed for weaving sheetings.

*Massachusetts, Lawrence. The new building erected for the Lawrence Duck Company has been completed and some of the machinery installed.

*Masachusetts, New Bedford. Plans are being prepared for a new weave shed to be built to the Potomska Mill.

Massachusetts, Williamstown. The Williamstown Mfg. Co. has received two carloads of card room machinery.

*New Hampshire, Salmon Falls. The Salmon Falls Mfg. Co. is installing 6,000 ring spindles to replace old mules.

New Jersey, May's Landing. The Ramony Mills Co. are to erect a new and up-to-date mill with latest improved equipment.

North Carolina, Albemarle. The Efird Mfg. Co. has increased its capital stock from $200,000 to $500,000 and it is reported that plans are being considered for enlarging the equipment and eventually installing looms.

*North Carolina, Cherryville. Construction work is being rushed on the new building being erected for the Gaston Mfg. Co. The new building will be 77 by 243 feet. Contract for the machinery equipment has been awarded.

North Carolina, Concord. The Franklin Cotton Mill is arranging for an enlargement of about 12,000 spindles.

*North Carolina, Concord. Work is being pushed on the new plant for the Patterson Mfg. Company. Electric power will be furnished by the Southern Power Company of Charlotte, N. C.

North Carolina, Duke. It is reported that the Erwin Cotton Mills are considering plans for the erection of another large cotton mill.

North Carolina, Lincolnton. It is reported that the Laboratory Cotton Mills have awarded contract for a new brick mill 80 by 100 feet, and two stories high.

*North Carolina, Statesville. The Bloomfield Mfg. Co. advises that they will install 2,000 new spindles.

*Pennsylvania, Chester. We have been advised by T. I. Birkin & Co. that while they have plans and specifications drawn for a proposed building and have received bids, it is questionable just how soon work will be started. The difficulty is in knowing how soon they could secure the necessary additional machinery and therefore matters have not yet been definitely decided.

Pennsylvania, Chester. The J. E. Fricke Co., proprietors of the Jefferson Mills, report that they have recently received a shipment of machinery from the Whitin Machine Works, consisting of 3,000 spindles for the spinning of number 8s cotton yarn, which they will use for their own use in the manufacture of braided and twisted cordage, clothes lines, sash cords and trolley ropes. The machinery is now being set up and will be in operation within a few days. This concern also operates a plant at Hulmeville, a short distance from the city. Both mills are being run to their fullest capacity.

Pennsylvania, Philadelphia. The Binns Patent Band Company, for many years at 5th and Berks Sts., have removed their plant to the building at 1842-46 Germantown Ave., where they will have more room. This concern, while still manufacturing a line of endless bands, are doing a large business on silk, worsted and cotton curtains.

Pennsylvania, Philadelphia. Christ Bros. Mfg. Co., manufacturers of dress trimmings, braids, cords and elastic goods with 250 braiders, located in the Keystone Bldg. at 13th and Buttonwood Sts., are about to lease another floor in the same building which will enable them to double their plant. They are very busy.

Pennsylvania, Philadelphia. The Lindley Mfg. Company has leased additional space in order to enlarge their output. Draperies are manufactured.

Pennsylvania, Philadelphia. A meeting of the stockholders of the Trainer Spinning Co. has been called for September 20th at the office of the company at 3d and Chestnut Streets. It is said that the principal matter to be laid before them is a proposition to increase the indebtedness of the company so that improvements can be made to their plant in Chester, Pa. The company has a capital of $100,000. T. Ashbly Blythe is president; N. B. Sloan, treasurer; and G. C. Turner, superintendent. They manufacture cotton yarns and have an equipment of 12,000 spindles.

*Pennsylvania, Philadelphia. Daniel Wall, reported to be increasing his equipment, states that eight narrow looms for the manufacture of dress goods have been added.

*Rhode Island, Enfield. The addition to the Esmond Mills will be 325 by 225 feet and 2 stories high instead of one story high as previously reported.

*Rhode Island, Pawtucket. Thirty new looms will be installed in the addition being built to the Blackstone Webbing Co. It is expected that manufacturing will begin about October 1. Electric power will be used.

*Rhode Island, Warren. The Parker Mills report that they are adding a number of mules to the plant at this place, not at Fall River as previously reported.

*South Carolina, Clinton. Work is being pushed forward on the new building being erected by the Clinton Cotton Mills.

South Carolina, Liberty. It is reported that the Liberty Cotton Mills will build an addition to their plant.

*South Carolina, Liberty. The Liberty Cotton Mills are making a 30-foot addition to their building and will add about 2,500 spindles. It is expected that the new machinery will be in operation by October 1.

*South Carolina, Union. It is again rumored that extensive improvements are to be made to the Union Buffalo Cotton Mills plant. Elmer E. Page, agent of the York Mfg. Co., Saco, Me., is investigating the proposed changes.

*South Carolina, Ware Shoals. It is reported that the new buildings of the Ware Shoals Mfg. Company have been completed and machinery is being installed. 20,000 spindles and 600 looms comprise the new equipment.

*Texas, Corsicana. Shwarts Brothers, proprietors of the Corsicana Cotton Mills, are making extensive improvements. Preparation is being made to move the machinery of the new Century Cotton Mills (Dallas), which they recently bought, to this place. Cotton duck is manufactured.

*Texas, Dallas. We have been advised that work has commenced on the addition to the Dallas Waste Mills. Cotton and woolen waste will be manufactured.

*Texas, Dallas. The branch plant of the Fulton Bag & Cotton Mills is nearly completed, and part of the equipment is now being installed.

Texas, Dallas. The Dallas Machinery Waste Mfg. Company will build an addition, 100 by 150 feet, in order to enlarge their equipment of machinery.

Mills Starting Up.

New York, Stuyvesant Falls. The Van Alen Cotton Mills, which have been shut down for the last three years, have been leased by the Collins Bag Company of New York City. Machinery will be installed and the plant operated at once.

Mills Shutting Down.

Pennsylvania, Philadelphia. Messrs. William Rogers & Co., 1720 N. 2d St., are finishing up their orders preparatory to closing down the plant and going out of business. They run on upholstery goods with 20 looms.

WOOLEN.

New Mills.

*Delaware, New Castle. We have been advised that the Delaware Mills Co., recently reported incorporated, was formerly the Cromwell Woolen Mills. Robt. Gambrill is president; J. Billingsly, treasurer; E. B. Gambrill, superintendent and buyer.

*North Carolina, Winston-Salem. Construction work is nearly completed on the blanket mill being built by the Chatham Mfg. Company, of Elkins, N. C. The investment in the new plant is covered by an increase in capital from $50,000 to $350,000.

Pennsylvania, Lansdowne. T. C. Hall, of Wm. Hall & Co., has purchased the looms of the Ramony Mills Co. (May's Landing, N. J.) and

will remove same to Lansdowne. Will make union goods, operating 23 looms. Finishing will be done outside.

Pennsylvania, Philadelphia. William Smith is about to start up a plant at Unity and Leiper Sts., Frankford, where he will put in six 72-inch looms on which he will manufacture men's wear, doing commission work.

*Pennsylvania, Philadelphia. The Kilmarnock Textile Manufacturing Co., whose main office is located at 240 La Salle St., Chicago, Ill., reported as about to start up a plant for the manufacture of carpets at Adams and Emerald Sts., state that the machinery is now coming in, 10 looms now being delivered and 20 more to come. Part of the plant will be in operation in about a week when samples will be made up and the goods placed on the market. This company will manufacture Scotch art fabrics, rugs and carpets, which they claim is something entirely new and which in quality will compare favorably with the Wiltons and body Brussels now being made. The officers of the company are Philip J. Lauten, president; Charles L. Fetterly, secretary, and William T. Scott, general manager and superintendent. The production will be sold through their main office in Chicago and an office in New York which has not yet been selected.

Rhode Island, Arcadia. The Arcadia Yarn Company has recently been incorporated. E. M. Tillinghast, Geo. C. Gordon, of Arcadia, R. I., and G. M. Youngman of Hope Valley, R. I., are interested.

*Wisconsin, LaCross. E. A. Stickler advises that the plant at this place has no connection with the Onalaska Woolen Mfg. Co. The new plant is named the North Side Yarn Mills. Woolen yarn is manufactured.

Enlargements and Improvements.

*Connecticut, Talcottville. The addition to Talcott Bros.' Mill will be 32 by 64 feet and three stories high.

Maine, Limerick. Eight new 200-spindle spinning frames have been installed in the Limerick Mills. Preparations are being made to install electric power.

Maine, Sanford. An addition 100 feet long is being built to one of the Goodall Worsted Co.'s mills.

Massachusetts, Auburn. Worsted machinery from the Lowell Machine Shop is being installed in the Ettrick Mills. It is reported that the capacity of the plant is being doubled.

Massachusetts, Collinsville. Eight new woolen mules have been installed in the Beaver Brook Mills of the American Woolen Company.

*Massachusetts, Fitchburg. The Shirreff's Worsted Co. advise us that 44 new looms will be installed in the weave shed being built for them.

*Massachusetts, Lowell. The new building reported to be erected for the Massachusetts Mohair Plush Co. will be used for finishing.

*Massachusetts, Methuen. The new weave shed for the Tremont Worsted Company will be 135 by 60 feet and one story high. The construction will be of cement.

Massachusetts, North Adams. The North Adams Mfg. Company has installed an electric plant to supplement their water power, which is very low in the summer months.

Massachusetts, Palmer. Hawkes & Ford are installing new machinery for their shoddy mill.

*New York, Clark Mills. The new spinning mill being erected for the Hind & Harrison Plush Co. is nearing completion and will be ready for occupancy in about a month. The building is a brick structure, two stories high, 80 by 276 feet and adjoins the main building. Ten thousand spinning spindles and 5,000 twisting spindles will be installed.

Pennsylvania, Landenburg. It is reported that the Landenburg Worsted Mills will install a number of new broad looms for men's wear and dress goods.

Pennsylvania, Philadelphia. The Westmoreland Mfg. Company has added 10 broad looms to its plant at 2627 Mutter St.

Pennsylvania, Philadelphia. The Fern Rock Woolen Mills have increased their capital stock from $100,000 to $200,000.

Pennsylvania, Philadelphia. The capital stock of the Philadelphia Felt Company has been increased from $75,000 to $150,000. It is reported that the increase is for the purpose of enlarging their business.

Pennsylvania, Philadelphia. Jamieson & Company, manufacturers of worsted and woolen dress goods and men's wear at 5423 Lena St., will install 14 broad looms.

*Pennsylvania, Topton. Work has been started on construction of new addition for the Crown Knitting Co. This plant is run on men's fine seamless half hose.

Rhode Island, Washington. Ten Knowles looms are being added to the equipment of the Narragansett Worsted Company.

*Virginia, Fredericksburg. Machinery has been installed in the new buildings of the Melville Woolen Mills which has been constructed within the last few months.

Mills Starting Up.

*Massachusetts, Hinsdale. Some of the machinery of the Hinsdale Woolen Company is being operated, and it is expected that the whole plant will be running in a few weeks.

Mills Shutting Down.

Connecticut, Putnam. The Bay State Worsted Co.'s plant has been closed and it is reported that all the business will be carried on from the Worcester plant.

Maine, Pittsfield. The Smith Woolen Company has shut down on account of a weavers' strike. Nothing definite can be stated as to when operations will be resumed.

Massachusetts, Hudson. The machinery of the Hudson Blanket Mill has been moved to the Hinsdale Woolen Mill Company's Mill at Hinsdale. The building is for sale.

Vermont, Ludlow. The Ludlow Woolen Mills have shut down for the month of August. This is due partly to a slow market and partly to make repairs.

SILK.

New Mills.

New Jersey, Paterson. H. Walter Baer, proprietor of the Harmony Silk Company, will build a new mill on 26th St. and 3d Ave. Plans have been drawn and contract made for a building 205 by 52 feet, two stories and basement.

*New Jersey, Paterson. We have been advised that the plant which is being started by Thomas Cartwright will be called the Cartwright Silk Company. Silk taffetas will be manufactured and 17 looms will be installed at the first. The company will give employment to 15 hands.

New Jersey, Paterson. A new firm known as Lappin & Long has started 12 looms on broad silks in the old Addy Mill. It is expected that more looms will be added shortly.

*New York, Brooklyn, Richmond Hill. Einstein, Westermann & Co. advise that work on their new mill will begin by September 1st. Manufacturing is expected to begin by June, 1908. Silk ribbons and shoe laces will be manufactured and the equipment will consist of 27 looms and 87 braiders.

*New York, Fonda. At a recent meeting of the directors of the Empire Fabric Co. the following officers were elected: Jacob Bachner, president; vice president and general manager, William Dexter; secretary and treasurer, August Klein; and assistant superintendent, John A. Bellis of Gloversville. The company has a capital of $7,500 and manufactures gloves and silk linings, operating 300 silk spindles and 11 knitting machines.

*New York, Fonda. The new silk mill being erected by Albert H. Fisher and George Lichtenstern is reported nearing completion. Manufacturing will probably be commenced early in September.

*New York, Olean. The Feder Silk Throwing Co., reported incorporated at Paterson, N. J., will begin to erect a building 90 by 150 feet at this place on August 25. Seven thousand spindles will be installed. Sidney Feder is president; H. E. Marcus, treasurer; and Geo. M. Feder, agent and buyer.

*New York, Sidney. Plans for the new Julius Kayser & Company mill have been completed. The building will be 192 feet long, 80 feet will be two stories high and the remaining 112 feet will be one story high.

*Pennsylvania, Shamokin. J. H. & C. K. Eagle, Inc., advise that construction work will begin at once on their new mill at East Shamokin. It is expected that manufacturing will begin by January 1. Three hundred looms will be installed for weaving silk dress goods and linings.

Enlargements and Improvements.

*New Jersey, Paterson. Contract has been let for the new mill to be erected for the Harmony Silk Co. The new building will be 205 by 52 feet, two stories and basement, with engine and boiler house. It is expected to have the plant completed and ready for occupancy by Dec. 1st, when the company will remove to same, occupying the first floor. Contemplate installing a 240 h. p. engine and dynamo for electric light plant.

New Jersey, Paterson. The Expert Silk Co. is considering plans for increasing their equipment.

New Jersey, Paterson. The Aetna Silk Co. has leased the space in the Ward St. Mills which was vacated by Demorest Bros. It is reported that more machinery will be installed.

New Jersey, West Hoboken. Givernand Bros. have completed an addition to their mill and are considering plans for a second addition.

New Jersey, Paterson. Fairhurst & Co. have installed a number of new looms. An addition to be used for office work has been completed.

Pennsylvania, Allentown. The Queen City Silk Co. has installed forty-two new looms.

Pennsylvania, Mayfield. The Alfred Harvey Silk Company has started up and soon will run its full equipment.

Pennsylvania, Scranton. It is reported that the Black Diamond Silk Company has secured $50,000 for the purpose of enlarging their mill and adding new equipment.

Mills Shutting Down.

New Jersey, Paterson. A. Brokman has sold his plant to I. R. Cohen.

Pennsylvania, Lansford. The Century Throwing Co. has been shut down on account of labor troubles.

Pennsylvania, Philadelphia. The plant of Holdsworth & Arthur, 1824 Cadwallader St., which has been run for the past few years by the late Fredk. Holdsworth as the sole proprietor, has been shut down and preparations are being made for the disposal of its equipment. The plant was run by Mr. Holdsworth on silk curtains, leno and upholstery goods and contained 16 looms.

Pennsylvania, Scranton. It is reported that the Kilgour Silk Throwing Company, the Providence Silk Company and the Petersburg Silk Mill are shut down on account of the strike for an eight hour day.

MISCELLANEOUS.

Connecticut, Danbury. Mark B. Smith, who recently started a silk dyeing plant, has discontinued the business and disposed of his plant.

*Massachusetts, New Bedford. The LaFontaine Braiding & Tape Co. will install 8 or 10 tape looms of 42 shuttles each in the addition being built to their mill. Tapes and braids will be manufactured from silk, cotton, mercerized and mohair yarns. Hugh Best is the superintendent and buyer.

*Missouri, St. Louis. The Columbia Embroidery Company reports that it has started the manufacture of braids, embroidery and similar lines. The capital stock is $2,000. Geo. H. Fenwick is president and J. Will Deubach, treasurer and superintendent.

New Jersey, Hoboken. The Nichols Tubing Company of 37th St. and 10th Ave., New York City, is building a five-story mill, 100 by 150 feet, at 8th and Grand Sts. Braiders, winders, etc., will be installed.

*Ohio, Elyria. The American Lace Mfg. Co. is incorporated with a capital stock of $300,000. J. J. Sullivan is president, R W. Ely, treasurer, and Henry Stevenson, superintendent and buyer. Construction work is being pushed on the plant, and the production of goods will begin about November 1. Fancy laces will be the only product manufactured.

*Pennsylvania, Philadelphia. The National Dyeing & Finishing Co., recently reported by us as having applied for a charter, have commenced their operations in the Bromley Mills at Jasper and York Sts., where they are dyeing and finishing cotton and silk hosiery. The company has a capital of $5,000. Henry G. Miller is president and superintendent.

Pennsylvania, Philadelphia. Messrs. Keddie & Wilson have leased quarters in the Bromley Mills at Jasper and York Sts., which they are equipping with 24 looms to be run on linen towels, using 20s cotton and 14s linen yarns. The plant will be run under the name of the Pathhead Linen Mills and the production sold direct. They expect to be in full operation within a week.

Pennsylvania, Philadelphia. The Ideal Hosiery Printing Company, with a capacity of 1,500 dozens per day, has rented the building at 125 Herman St., Germantown, where they are doing a business of print and extract work on hosiery, making a specialty of white extract on black. Frank Haring, the proprietor of the establishment, states that it is also his intention to fit up a plant for the dyeing of hosiery within a short time.

Pennsylvania, Philadelphia. The United States Trimming Co., Kartman & Pels, has leased the building at 1410 North 6th St. and will increase its equipment.

Pennsylvania, Philadelphia. The Alta Waste Manufacturing Co., located on Jasper St. below Westmoreland, which was recently burned out with a loss of about $7,000 on stock and $5,000 on its building, reports that it is their intention to start up again as soon as the insurance is adjusted and the building put in shape for operation. The company has a capital of $15,000. H. Roberts, president and treasurer, and F. Bingham, secretary. Shredded carpets and jute are manufactured.

Pennsylvania, Philadelphia. The Courtrai Manufacturing Co., now located at Franklin and Church Sts., Frankford, have purchased the Crankshaw Mills at Elizabeth and Unity Sts., into which they will remove as soon as their lease expires. The company states that they have given out orders for several thousand dollars' worth of new machinery to be installed in their linen department They are twisters of lines and cotton yarns, flax and linen yarns and coners and tubers of yarns of all kinds.

Pennsylvania, Philadelphia. The Monarch Rug Co., Unity and Leiper Sts., Frankford, operating 12 looms on fibre rugs, has been shut down for the past two months and it is reported will not start up again. This company was incorporated a few years ago with a capital of $125,000 and with the following officers: F. G. Barrett, treasurer; and Wm. Fawell, superintendent.

Pennsylvania, Philadelphia. Gordon Bros., manufacturers of hair cloth, are planning to install 100 additional looms.

Pennsylvania, Philadelphia. The Stanley Manufacturing Co., located at Adams and Church Sts., Frankford, taking advantage of the dull summer months, have been equipping their plant with new machinery and making many alterations. Another floor has been leased, the company now occupying almost the entire building. They wind, twist, spool, cone, etc., cotton, wool, worsted and natural and artificial silk yarns on 10 twisters, 4 winders (cone), 10 spoolers and 2 tubers. They expect to be very busy in a short time.

Pennsylvania, Philadelphia. The Penn Textile Company, formerly located at 267 South 4th St., have removed their plant to 241 Arch St. to make room for enlargements. F. J. Quinn is agent. Coning and winding all kinds of yarn is done.

Rhode Island, Pawtucket. The Boston and Chicago Hair Co. has started operations in the building formerly occupied by the New England Thread Co. The new company is capitalized at $50,000.

*Rhode Island, Providence. Work on the addition to the Glenlyon Dye Works has progressed so that the new buildings are nearly ready for occupancy.

South Carolina, Walhalla. The Oconee Knitting Mill Co. has added a dyeing plant to its equipment and is making other improvements.

*Tennessee, LaFollette. The LaFollette Knitting Mills Co. advise that they have started manufacturing cotton and woolen half hose, blankets and jeans. Six looms and 20 knitting machines are operated. The company is capitalized at $20,000.

FIRES.

Alabama, Tuscaloosa. The Tuscaloosa Cotton Mills, located at Cottondale, have been seriously damaged by fire.

Georgia, Augusta. The Augusta Factory was struck by lightning which set fire to the cotton in the card room. Large quantities of manufactured goods were ruined and damage to the machinery was heavy.

Massachusetts, Ludlow. The store house in the rear of the No. 10 Mill of the Ludlow Mfg. Associates was practically destroyed by fire August 7. The loss is estimated at several thousand dollars.

*Massachusetts, North Dighton. Some of the machinery for the Chadwick Print Works was destroyed by fire. The machinery was stored awaiting the completion of the building. The loss is about $1,000, not covered by insurance.

*Minnesota, St. Paul. The fire at the International Flax Twine Co.'s plant, which was previously reported, caused a loss of $30,000, covered by insurance.

New York, Marlboro. The plant of the Sutcliffe Bros., manufacturers of woolen yarns, has been destroyed by fire. The loss is estimated at $40,000.

Pennsylvania, Philadelphia. Fire at the mill of Thomas Henry, Jr., Emerald and Willard Sts., caused a loss of $1,200.

Pennsylvania, Philadelphia. The Wabash Mills, Nixon and Umbria Sts., Manayunk, was recently damaged by fire to the extent of $500. They are manufacturers of carpet and blanket yarns and wool spun cotton yarns on 12 sets. The company has a capital of $50,000.

Pennsylvania, Philadelphia. A fire which recently started in the batcher room of the Christopher Bailey Rope Works at 810-16-18 Swanson St., in the lower part of the city, damaged the plant to the extent of $5,000.

Pennsylvania, Philadelphia. Sparks caused by friction in one of the pickers in the shoddy mill of W. W. Hitchon at Mechanic and Morton Sts., Germantown, damaged the plant to the extent of $1,000.

Pennsylvania, York. The Elk Hosiery Co., which was started in March, has been destroyed by fire. The loss is reported at $20,000.

FAILURES AND SUSPENSIONS.

*Illinois, Chicago. The Schwartz Knitting Mills have been adjudged bankrupt, and the American Trust & Savings Bank appointed receiver. This company moved to Chicago recently from Minneapolis.

FACTS AND GOSSIP.

Alabama, Huntsville. It is reported that the capital stock of the Rowe Knitting Company will be increased and the plant greatly enlarged.

*Canada, Ontario, Toronto. The Seaforth Woolen Mills Company, which recently changed its name to the W. E. Southgate & Company, Ltd., advises us that no change will be made in the capacity of the mill.

Canada, Quebec, Valleyfield. It is reported that the Montreal Cotton Co.'s mills at this place may shut down on account of a strike.

*Connecticut, Baltic. Contract has been awarded for the addition to the Shetucket Worsted Mills, M. H. Donahue, proprietor.

Connecticut, Canaan. The Reliable Manufacturing Company announces that unless more help can be obtained their hosiery mill will be removed to a larger place.

Connecticut, Danielson. The Danielson Worsted Company is making preparations to run its mill night and day.

*Connecticut, Norwich. We have been advised that the loss sustained by the U. S. Finishing Company on account of the recent fire was from $2,000 to $2,500, instead of $20,000. No new machinery will be needed.

*Connecticut, Torrington. The Warrenton Woolen Company has bought a large tract of land which was formerly a site of Wadham's Mill. It is reported that nothing will be done toward the construction of a new plant until the spring of 1908.

*Connecticut, Willimantic. The Windham Mfg. Co., which is building an addition to one of its mills, is reported to be considering plans for another addition.

*Georgia, Augusta. We have been advised by the Augusta factory, whose plant was recently damaged by fire in the card room, that they will not be in need of any new machinery.

Georgia, Big Creek. W. H. Arnold is reported considering plans for a knitting mill.

Georgia, Columbus. The Bibb Mfg. Co. has filed a petition asking for a twenty-year charter and a capitalization of $1,628,300, with the privilege of increasing to $2,500,000.

*Illinois, Zion City. Marshall, Field & Co. advise that they have not yet taken hold of the Zion plant. For the present no information can be secured as to the future of the Zion Lace Industries.

Indiana, Peru. It is reported that The Racine Woolen Mills will shortly shut down and the business be removed to the main plant at Racine, Wis.

Kansas, Hutchinson. L. A. Beebe, Secretary of the Commercial Club, has received a communication concerning the establishment of a woolen mill at this place. It is rumored that a Maine manufacturer is looking for a new location.

*Louisiana, Baton Rouge. It is reported that W. K. Brady has raised some capital for a knitting mill and also has interested E. F. O'Brien, who is secretary and treasurer of the Roanoke Knitting Mills, Roanoke, Va., in the project.

Maine, East Wilton. It is rumored that the Walker Mills are running out the stock in process preparatory to shutting down indefinitely.

Maine, Madison. It is reported that H. J. Libby has bought the Indian Spring Woolen Co., and that the plant will be started up this fall on worsted goods.

Massachusetts, Clinton. It is reported that Henry Dio, proprietor of the Clinton Hosiery Co., will discontinue manufacturing.

Massachusetts, Fall River. It is rumored that the new yarn mill project has been abandoned, Chas. R. Danielson continuing with the New England Cotton Yarn Co.

*Massachusetts, Gardner. The Oxford Linen Mills report that manufacturing will begin shortly.

Fourteen sets of cards and 125 looms will be operated on linen goods.

*Massachusetts, Globe Village. Work is being rushed on the new building being erected for the Hamilton Woolen Company.

Massachusetts, Fall River. The Massasoit Mfg. Company is enlarging its buildings on the land formerly occupied by the Barlow Waste Company. The new buildings will be two stories high and be used for storage.

*Massachusetts, Hinsdale. Machinery and supplies are arriving for the Hinsdale Woolen Company.

*Massachusetts, Indian Orchard. It is reported that the machinery of the Rhode Island Worsted Company will not be moved to the new mill at Stafford Springs, Conn., at present, as recently reported.

*Massachusetts, Lowell. F. B. Russell, who purchased the Pickering Mfg. Company, advises us that no definite plans have been made regarding the disposition of the mill.

*Massachusetts, Methuen. The plant of the Tekcips Dyeing, Weaving and Finishing Company was bought at a trustee sale by Alfred C. Gaunt for $20,000. It is reported that the plant will be used as an extension of the Tremont Worsted Company of which Mr. Gaunt is superintendent.

Massachusetts, New Bedford. It is stated that a new 60,000 spindle yarn mill will be formed in New Bedford with a capital of $800,000. An option has been secured on land adjacent to the Nonquit Mill and it is probable that plans will be advanced so that work may begin this fall.

*Massachusetts, Spencer. It is reported that Charles N. Prouty has taken possession of the property occupied by the Taylor Woolen Company. This action is a result of financial troubles directly due to the recent fire which destroyed one of the company's mills.

*Minnesota, Crookston. It is again reported that a plant for the manufacture of linen is being considered.

New Hampshire, Lebanon. The Carter & Rogers Mill has withdrawn from the Merrimack Woolen Company.

New Hampshire, Tilton. The Elm Woolen Mills Company and the A. D. Carter Mill have withdrawn from the Merrimack Woolen Company.

New Jersey, Jersey City. The Holland Mfg. Company has been incorporated with a capital stock of $400,000. Cotton, linen and silk goods will be manufactured. O. K. Minock, A. L. Perkins and W. J. Kenney of Jersey City are the incorporators.

New Jersey, Paterson. Machinery is being moved from the American Silk Weaving Co.'s plant in Passaic to the Spruce Street mills.

New Jersey, Paterson. The Fishkin Silk Co. contemplates adding to their plant if floor space can be secured.

New Jersey, Paterson. The Central Ribbon Company of 102 R. R. Avenue is considering plans for the addition of more looms.

New Jersey, Woodbine. The Baron De Hirsch fund, which has been seeking textile and other industries for its colonies in this state, are asking for estimates on plans drawn by Stearns & Castor. The plans are for a brick mill, 60 by 242 feet, 2 stories and basement and a brick sponging house 26.2 by 32.2 feet, one story, with an additional story for the boiler house.

New York, Albany. A certificate of incorporation of F. C. Huyck & Co. has been filed. The capital stock is $500,000. Felts are manufactured.

*New York, Binghamton. We have been advised that the report stating that a North Carolina concern was to occupy the plant formerly used by the Binghamton Linen Company is erroneous.

New York, Boonville. It is reported that L. N. Littauer of Gloversville, N. Y., has been to this village with a view to starting up a silk yarn mill and that the Business Men's Association are about to take up the matter and make him an offer. It is claimed that the mill to be erected is for the manufacture of an article which will revolutionize the manufacture of silk, worsted, woolen and mercerized fabrics.

New York, Clayville. It is reported that the Clayville Knitting Co. will more than double its present equipment.

*New York, Clayville. The Clayville Knitting Co. advises that there is no immediate prospect of increasing their equipment.

New York, Lockport. The Edward T. Dolan Hair Cloth Company has been incorporated with a capital of $5,000. The incorporators are Edward T. Dolan and Annie Dolan of Niagara Falls, John F. Campbell and Rhenie Campbell of Lockport.

New York, Mohawk. It is reported that the receivers of the Mohawk Valley Knitting Mills, who are holding out for $40,000, have recently received a bid from D. D. Crouse of Broadalbin of $32,000. It is also said that another bid of $35,000 has been made.

New York, New York. The American Silk Company has filed a certificate of increase to its capital stock from $6,250,000 to $11,000,000.

*New York, Theresa. The Theresa Woolen Mfg. Company, which was recently reported organized, has elected officers as follows: F. L. Sortway, president; James Vock, vice president; and Geo. P. Schwartz, secretary and treasurer. It is reported the plant will soon be ready for operation

*North Carolina, Bessemer City. As reported in June, the Vermont Mills and the Whetstone Cotton Co. will be sold at auction on Wednesday, Aug. 28.

North Carolina, Bessemer City. It is reported that Mr. George is interested in plans for the erection of a cotton mill at this place.

North Carolina, Cherryville. The Vivian Cotton Mills are reported to be planning further enlargements.

North Carolina, Durham. It is reported that a plant will be started by L. A. Sykes and L. B. Giles for the manufacture of handkerchiefs.

North Carolina, Enfield. The Enfield Hosiery Company has been incorporated with a capital stock of $50,000. Geo. Andrews and others are the incorporators.

*North Carolina, Glen Alpine. J. T. Pitts reports that he is not organizing a company to build a cotton mill, as previously reported. He owns water power suitable for cotton manufacturing and would like to interest cotton manufacturers.

North Carolina, Mocksville. It is reported that a company has been organized to build a $50,000 cotton mill. Dr. M. D. Kimbrough is reported as interested.

*North Carolina, Orangeburg. The Orange Cotton Mills are again running full time. They are in the market for twisting machinery.

*Ohio, Cleveland. The Standard Knitting Co. advises that the report to the effect that they will add a hosiery plant is incorrect.

Ohio, Toledo. It is reported that Jos. Roth has bought the Peerless Knitting Mills Co.

Oklahoma, Oklahoma City. R. R. Fuller is reported as interested in a project for building a $800,000 cotton mill at Sulphur, Ark.

*Pennsylvania, Boiling Springs. Frank T. McElroy is moving his plant to this place from Steelton, Pa. He expects to be in full operation by October 1. Half hose is manufactured on forty 84-needle machines.

*Pennsylvania, Hazelton. The Hazelton Bleach Works, of which H. A. Kummerer is proprietor, will begin operations about the middle of September. This was formerly the Hamburg Bleach Works, of Hamburg, Pa.

Pennsylvania, Philadelphia. The Elk Knitting Mills Co., manufacturers of silk, cotton, woolen, worsted and mercerized underwear for women and children at 10th and Diamond Sts., Phila., report that they have appointed R. Rosenthal & Co., 915 Van Buren St., San Francisco, Cal., their representatives on the Pacific Coast.

Pennsylvania, Philadelphia. It is reported that O'Neill Brothers, Inc., who recently purchased the mill of the James Dunlap Carpet Company, are organizing a new company to start up the mill on carpets. The purchase price of the plant was $175,000 and it is said before the new company starts it up many important changes will be made to the building. O'Neill Bros., Inc., are well known as manufacturers of waste and dealers in wool, hair and noils at Howard and Oxford Sts. They have a capital of $300,000. The following are the officers: Peter O'Neill, president; John O'Neill, vice president; Francis O'Neill, manager; Jos. O'Neill, secretary and treasurer.

Pennsylvania, Philadelphia. Bernstein, Kaufman & Co., 1017 Race St., millinery and dress trimmings manufacturers, are operating new knitting machines, recently installed, on neckties of natural and artificial silk. They are receiving many orders.

Pennsylvania, Philadelphia. It is reported that creditors have recently filed a petition in bankruptcy against Henry Sassman & Co., manufacturers of ingrain carpets on 18 looms at 1822-28 Cadwallader St. The creditors and amounts claimed are: Haslam & Querner, $1,394.44; John H. Willey, $1,893.74, and Joseph M. Adams, $176.82.

Pennsylvania, Philadelphia. It is reported that Thomas Graham, manufacturer of ingrain carpets on 13 looms at 1729 Gillingham St., Frankford, has shut down the plant, being unable to meet his obligations. His liabilities, it is said, are about $7,000, and assets $400.

*Pennsylvania, Philadelphia. The new building of the Brown-Moore Hosiery Co. will be ready for occupancy in September.

Pennsylvania, Philadelphia. Record has been made of the sale of one of the plants formerly operated by the Dunlap Carpet Co., at the N. E. corner of 55th and Hunters Ave., to William B. Reilly & Co. for the sum of $19,000. The property comprises a four-story mill with a boiler and engine house.

Pennsylvania, Philadelphia. The Quaker City Knitting Co., which recently removed from Woodbine, N. J., to the S. W. corner of 10th and Susquehanna Aves., has installed machinery on three floors and is in full operation. Wool and worsted sweaters, coats and tam-o'-shanters are manufactured. The plant consists of 40 knitters and 60 sewing machines, run by electricity. The mill formerly occupied by them at Woodbine is for sale.

Pennsylvania, Philadelphia. D. Stewart Robinson has recently been elected treasurer of the Tracy Worsted Mills Co., to take the place of J. A. Perkins. The other officers are Frank T. Griswold, president, and James W. Fry, secretary. They have a capital of $300,000 and manufacture worsted yarns on 8 combs and 7,720 spindles. Product is sold direct.

Pennsylvania, Philadelphia. The Liberty Bell Hosiery Mills, 4318 Frankford Ave., Frankford, have recently gone through a process of reorganization and are capitalized at $25,000. The officers are E. C. Locke, president, and Samuel B. Dingley, secretary and treasurer. Mr. Dingley has for many years been connected with the Simons & Struve Hosiery Co., and, at this time retains his stock in the concern, being one of its heaviest stockholders. The Liberty Bell Mills manufacture infants' stripes and ladies' plain hosiery and have recently increased the number of their knitters by putting in 20 new Acme machines. Buy 18s to 60s cotton yarn. The production is sold direct.

Pennsylvania, Philadelphia. John Magrann and Chas. Otterson have started a plant at 1624 North 4th St.

Pennsylvania, Philadelphia. The Derby Knitting Mills, of which Ernest Braithwaite is the proprietor, is operating 12 flat knitting machines and 4 sewing machines on mittens and dolls' coats and sweaters and fancy knit goods at 4964 Baynton St., Germantown, selling the production direct. He uses wool, worsted and cotton yarns.

Pennsylvania, Philadelphia. The Wayne Dyeing & Finishing Co., dyers and finishers of hosiery,

have secured quarters at Wayne and Bristol Sts., where they are now located. The plant is under the management of Harry Sprowles.

*Pennsylvania, Philadelphia. The buildings formerly operated by the Trimble Dyeing, Printing & Finishing Co., located at Ontario and Allen Sts., in Richmond, have been sold to Dill & Collins for the sum of $75,000. The new owners will fit up the building with machinery for the manufacture of paper.

Pennsylvania, Philadelphia. Creditors have filed a petition in the United States District Court asking that Robert Wilde & Sons be adjudged bankrupts. The firm is composed of Isaac Wilde and George Daymon. The creditors and their claims are Brown Bros. & Co., $28,928.77; Wilde & Bailey, $199; and the Bell Telephone Co., $12.

Pennsylvania, Philadelphia. Harry Z. Taylor, manufacturer of silk, cotton and mercerized corset and shoe laces at 219-20 North 4th St., has removed his plant to the S. W. corner of 3d and Federal Sts., Camden, N. J., where the business is now run under the name of Stokes & Taylor. The new firm has also made arrangements for the manufacture of cotton tapes and has recently placed an order for six tape looms which are now under course of construction and will be placed in operation as soon as delivered. The production is sold direct.

Pennsylvania, Reading. It is reported that the Reading Hosiery Company may be organized under the name of the Vaughn Knitting Company. All departments of the mill except the finishing department are shut down.

Pennsylvania, Wernersville. The Wernersville Hosiery Mill has been sold to Chas. G. Hain. Mr. Hain will take possession about August 12th and expects to enlarge and improve the equipment.

*Rhode Island, Arcadia. The Arcadia Yarn Company, recently reported incorporated, was formerly known as Gordon & Tillinghast.

*Rhode Island, Pascoag. The machinery of the Hawthorne Worsted Mill has been purchased by Fred L. Sayles. It is reported that the mill buildings and machinery will be leased.

Rhode Island, Providence. It is reported that the Narragansett Worsted Co., of Washington, R. I., is to locate at this place.

Rhode Island, Woonsocket. It is reported that the Lawton Spinning Company is considering plans for the erection of a $300,000 addition to their plant.

*Rhode Island, Woonsocket. Messrs. Coisne & Lambert, the French manufacturers who were looking for a site suitable for a linen mill, state that they will locate at this place if a plant is started in the United States.

Rhode Island, Woonsocket. It is reported that a party of French manufacturers from Armentieres, France, are interested in locating a $200,000 linen mill in this country. They have been looking at available sites at this place.

South Carolina, Abbeville. It is rumored that another cotton mill will be started.

South Carolina, Aiken. J. W. Ashurst advises us that he is chairman of a committee to investigate the feasibility of establishing a knitting mill at Aiken. He is interested in suggestions relating to knit goods manufacturing.

South Carolina, Cowpens. It is reported that S. B. Wilkins has made arrangements for the erection of another cotton mill.

*South Carolina, Fairmount. We have been advised by H. C. Fleitmann of New York, one of the purchasers of the Tyger Cotton Mills, that plans for the reorganization of the Tyger Cotton Mills have not been completed.

South Carolina, Greelyville. At a meeting of the citizens, it was decided to erect a $200,000 cotton mill and a large amount of stock was subscribed.

South Carolina, Inman. It is reported that the Inman Mills are considering plans for a new mill to be equipped with 20,000 spindles and looms.

South Carolina, Marion. It is reported that the Marion Mfg. Company will build another mill.

*South Carolina, Marion. The Marion Mfg. Co. advises that they are not contemplating building at present.

South Carolina, Orangeburg. The Orange Cotton Mills are running only the first three days of the week. It is reported that this is due to a shortage of cotton.

*South Carolina, Rock Hill. The Hamilton-Carhartt Cotton Mills, which were incorporated some time ago and took over the Bellevue Mills, No. 2, is nearly ready to operate on denims. The capital stock is $500,000. Hamilton Carhartt of Detroit, Mich., is president and J. C. Adams, resident manager.

South Carolina, Spartanburg. There is a rumor of another cotton mill being built. John B. Cleveland is reported as interested.

Tennessee, Johnson City. The Watauga Hosiery Mills have bought the plant of the Unaka Knitting Mills, and will operate both plants.

*Texas, Houston Heights. The Oriental Textile Mills have been erroneously reported as contemplating erecting a large cotton mill.

Texas, Uvalde. It is rumored that $150,000 is being raised for the establishment of a mohair factory at this place.

Virginia, Blacksburg. It is reported that the Blacksburg Knitting Mills have been organized with a capital stock of $35,000. J. H. Woodwine has been elected president and M. L. Slusser, secretary and treasurer.

Virginia, Lynchburg. The Lynchburg Hosiery Mills have been incorporated with a capital stock of $50,000. J. D. Burton is president, R. C. Brackford, vice president and C. G. Burton, secretary and treasurer.

Personals.

G. S. Jones has resigned his position as overseer of carding for the Orangeburg Manufacturing Company, Orangeburg, S. C. He is succeeded by T. M. Laird.

M. C. Johnson has accepted a position as overseer of spinning and spooling at the Bibb Mill No. 2, Macon, Ga. He was formerly employed in a similar capacity at the Monroe Cotton Mills, Monroe, Ga.

E. Turnipseed, formerly overseer of carding at one of the mills at Gaffney, S. C., has accepted the position as superintendent at Tallassee, Ala.

C. H. McDaniel, formerly overseer of spinning at the Dixie Mill, La Grange, Ga., now has charge of both carding and spinning at that mill.

Wm. Glover has resigned his position as overseer of weaving at Pell City, Ala., and is now at Phoenix City.

O. H. Farr has accepted the position as superintendent of the Poulan Cotton Mills, Poulan, Ga. He was formerly employed at the Acworth Manufacturing Company, Acworth, Ga.

J. T. Turner has succeeded Dave Crockett as overseer of spinning at Tallassee, Ala.

William McNeil has accepted the position as superintendent of the People's Cotton Mill, Montgomery, Ala., succeeding Ira Williams.

Ed. Fleming has accepted the position as overseer of spinning at the John M. Stone Mills, Starkville, Miss.

Robert Chapman was elected president of the Marlboro Cotton Mills, Bennettsville, S. C., at the annual meeting of the directors, which was held July 18th. He was formerly secretary-treasurer of this company.

A. S. Winslow has accepted the position as superintendent of the Anderson Cotton Mills, Anderson, S. C. He was formerly superinendent of the Inman Cotton Mills, Inman, S. C.

W. A. Price has resigned his position as overseer of spinning at the Hope Mills, Hope, N. C., and is now traveling salesman for the De Haven Manufacturing Company, Brooklyn, N. Y.

John B. Ray, overseer of spinning and carding at the Falls Mills, Norwich, Conn., has resigned and accepted a position with the Dwight Manufacturing Company, Chicopee, Mass.

Merton Berry has accepted a position as overseer of carding for Gay Brothers, Cavendish, Vt.

Frank E. Brown is to resign his position as overseer of the spinning department of the Pequot Mills, Montville, Conn.

Ernest S. Simon, a silk merchant of Lyons, France, committed suicide in the Hotel Imperial, New York, July 25th. He was about 40 years of age.

William Jowett, formerly with the Cleveland Worsted Mills Company, Cleveland, Ohio, has been engaged by the Salt's Textile Manufacturing Company, Bridgeport, Conn., to fill the position of superintendent at their mill.

E. F. Wentworth, formerly of Lititz, Pa., has accepted the position as boss knitter for the Oxford Knitting Mills, Barnesville, Ga.

Walter E. Devine has accepted the position as boss dyer for the Nashua Valley Mills, Ashaway, R. I. He was formerly employed at New Bedford, Mass.

George F. Whitten of Manchester, N. H., has been appointed agent of the Suncook Mills, Suncook, N. H., succeeding William G. Nichols, who has resigned. Mr. Whitten was formerly agent of the Amory Mills, Manchester, before that concern was consolidated with the Amoskeag Mills.

Hiram Higham has resigned his position as superintendent of the Wamsutta Mills, Nos. 4, 5 and 6, New Bedford, Mass. He was employed by that company for 30 years.

Joel Pearson has accepted the position as second hand of the dye house at Haile & Frost's mill, Hinsdale, N. H. He was formerly employed at Lowell, Mass.

N. B. Dial has resigned his position as president of the Ware Shoals Cotton Mills, Greenville, S. C.

G. P. Willman has resigned his position as boss dyer for George E. Kunhardt, Lawrence, Mass., after 7 years service.

F. M. Maurer has accepted the position as overseer of finishing for the H. V. Wentzel Knitting Mills, Reading, Pa. He was formerly employed with the Newville Knitting Company, Newville, Pa.

Thomas Keefe has accepted the position as boss dyer for the Hartford Woolen Company, Hartford, Vt. He was formerly employed at Pittsfield, Me.

W. P. Bennick has accepted the position as overseer of spinning at the Fidelity Mills, Charlotte, N. C. He was formerly employed with the Erwin Cotton Mills, West Durham, N. C.

Sidney Clementson, a well known importer of Australian and New Zealand wool, of Boston, Mass., retired from business August 1st.

W. J. Willette has accepted a position as overseer of spinning for the Erwin Cotton Mills Company, Cooleemee, N. C. He was formerly overseer in that department at the Chadwick Manufacturing Company, Charlotte, N. C.

John P. Gould has resigned his position as foreman at the Highland and Massasoit Mills, Huntington, Mass.

Edmund O. Immel, who has conducted a dye works at Bramcote, Pa., for the past 6 years, died at his home in Pottstown, Pa., Thursday, August 1st, about 5 o'clock. The cause of death was heart disease.

W. S. Trickett has resigned his position as superintendent of the Pequot Mills, Montville, Conn. He was formerly employed with the Otis Company, Ware, Mass.

J. H. Tierney has accepted the position as boss finisher for the Sheridan Woolen Company, Ash-

uelot, N. H. He was formerly employed at the H. T. Murdock & Company mill, Proctorsville, Vt.

Frank Judson has accepted the position as overseer of finishing for the Jefferson Manufacturing Company, Jefferson, Mass. He was formerly employed with the Concord Manufacturing Company, Penacook, N. H.

W. O. Tallent, formerly with the Thomaston Cotton Mills, Thomaston, Ga., has accepted the position as superintendent of the Wehadkee Yarn Mill, Rock Hill, Ala.

A. Turner, designer at the Oldham Mills, Philadelphia, Pa., has resigned and accepted a position at the Philadelphia Tapestry Mill of that city in a similar capacity.

A. S. Jordan, superintendent of the Eagle & Phoenix Cotton Mills, Columbus, Ga., sustained a broken arm and other injuries in an accident in the elevator at the mill recently.

William Barton, overseer of the beaming and drawing-in department at the No. 1 mill at West Warren, Mass., has resigned. He is succeeded by Andrew Smith. Fall River, Mass.

George W. Shepard, overseer of the spinning department of the Wauregan Company, Wauregan, Conn., has resigned.

John S. Hoyle, for the past three years in charge of the worsted drawing department of the Globe Woolen Company, Utica, N. Y., has severed his connection with that company and accepted a position with the Steere Worsted Mill, Providence, R. I.

Jacob B. Babcock has accepted a position as overseer of weaving for the Ashaway Woolen Company, Ashaway, R. I.

George C. Farrell, superintendent of the Ontario Knitting Company, Oswego, N. Y., has associated himself with others and organized the Norwich Knitting Company, Norwich, N. Y. They will manufacture underwear.

C. L. Pierce has been elected secretary of the Eagle & Phoenix Mills, Columbus, Ga.

Charles R. Danielson, superintendent of the New England Cotton Yarn Company, Fall River, Mass., has tendered his resignation, to take effect September 1st. He was connected with the Sanford Spinning Mill for 15 years, and also with the Globe Yarn Mill.

R. M. Lindsay has accepted the position as overseer of carding for the Highland Park Mill No. 3, North Charlotte, N. C. He was formerly employed at the Chadwick Mill of the same city in a similar capacity.

Pink Hilton has accepted the position as overseer of carding at the Chadwick Manufacturing Company, Charlotte, N. C. He was formerly with the Continental Manufacturing Company of that city.

J. P. McNeil has accepted the position as superintendent of the People's Cotton Factory, Montgomery, Ala. He was formerly superintendent of the Clark and Eugenia Mills, Jonesboro, N. C.

R. T. Craft has accepted a position as overseer of spinning at Chattahoochee, Ga. He was formerly overseer of spinning at the Athens Manufacturing Company, Athens, Ga., and later worked at Aiken, S. C.

M. H. Hall has accepted the position as overseer of spinning nights for the Brookford Mill, Hickory, N. C. He was formerly employed at the Aetna Mill, Union, S. C.

James R. Grubb has accepted the position as superintendent of the Williamston Cotton Mills, Williamston, S. C. He was formerly superintendent of the Walhalla Cotton Mills, Walhalla, S. C.

Albert Baechtoldt has resigned his position as superintendent of the Humboldt Cotton Mills, Humboldt. Tenn.

P. R. Durham has accepted a position as overseer of the cloth room at the Norris Mill, Cateechee, S. C. He formerly held a similar position at Liberty, S. C.

William F. Dahne, formerly with the Minster Woolen Manufacturing Company, Minster, Ohio, has accepted the position in charge of the dyeing and finishing department of the Laurel Mills Manufacturing Company, Rossville, Ga.

Lieut. Thomas Judd has accepted a position as overseer of the dressing department at the Premier Mill, Wickford, R. I. He was formerly employed at the Dunn Worsted Mill, Woonsocket, R. I.

Patrick Gillen has resigned his position as boss dyer for the Passaic Woolen Company, Passaic, N. J. He is succeeded by Frank Austin, of Rockville, Conn.

Samuel H. Walsh has resigned his position as boss dyer at the French Textile Mill, Mechanicville, Conn.

Henry Etchells has accepted the position as overseer of the Totoket Mills, Versailles, Conn. He was formerly employed at New Bedford, Mass.

James E. Jackson has resigned his position as master mechanic at the Acushnet Mills, New Bedford, Mass., which position he has held for 17 years.

William Brayden has accepted the position as boss of the fulling room at the Assabet Mills, Maynard, Mass., succeeding Joseph Glennon.

Joseph Heroux has been promoted to the position as overseer of the mule room at the Globe Mill, Woonsocket, R. I. He was formerly second hand at that mill.

James P. Kennedy has acepted a position as boss dyer for the Gulf Woolen Mills, Conshohocken, Pa. He was formerly employed at Millbury, Mass.

George E. Coster, overseer of dyeing at the Oella Mills, Oella, Md., has resigned and gone to Philadelphia.

Edward Hilton resigned his position as overseer of the mule room at the Globe Mill, Woonsocket, R. I., Saturday, August 3d, where he has ben employed since the mill was built in 1874. Mr. Hilton was presented seven $5 00 gold pieces by the help under him.

Albert Beachtold, superintendent of the Humboldt Cotton Mills, Humboldt, Tenn., has resigned.

H. C. Burnett, president and agent, will superintend the mill in the future.

Jacob Stirewalt has accepted the position as superintendent of the Mary Leila Cotton Mills, Greensboro, Ga. He was formerly with the Highland Park Mills, Charlotte, N. C.

T. G. Murdock, overseer of weaving for the Humboldt Cotton Mills, Humboldt, Tenn., has resigned and accepted a similar position with the Lincoln Cotton Mill, Evansville, Ind.

Howard Holbrook, employed as designer at the S. E. Scott Mills, Uxbridge, Mass., has resigned and accepted a position at the Glen Worsted Mills, Pascoag, R. I.

L. W. McCrillis, formerly with the Newport Woolen Co., Newport, Me., has accepted the position as master mechanic with the Kennebec Mills, Fairfield, Me.

J. H. Harris, formerly overseer of weaving for the Inman Mills, Inman, S. C., who resigned to accept the position as boss weaver for the Durham Cotton Manufacturing Company, East Durham, N. C., has again entered the employ of the Inman Mills, as superintendent. He had charge of the weaving department at this mill for 4 years.

Sam Westall has resigned his position as superintendent of the Perrin Cotton Mills, Celeste, Tex. He is now located at Napier, Tenn.

Sands M. Hart, treasurer and manager of the Racine Woolen Mills, Racine, Wis., who succeeded his father in the business and was a heavy stockholder, has severed his connection with that company.

John Speed, overseer of the drawing department of the Stafford Worsted Mills, Stafford Springs, Conn., has resigned and returned to Lawrence, Mass.

Daniel Dewey, a prominent wool merchant of Boston, died at his home in Newton, Mass.

John J. Shea has accepted a position as overseer of carding for the Saugus Mfg. Co., Saugus, Mass. He was formerly employed at the Concord Mfg. Co., Penacook, N. H.

Henry La Grasse has been appointed overseer in the spinning department at the Pequot Mills, Montville, Conn.

Ovide Broullard has accepted the position as overseer of weaving at the Pequot Mills, Montville, Conn., succeeding Samuel Bridge.

Samuel J. McIntyre, overseer of carding at the Victor Mfg. Co., Clinton, Mass., has been appointed overseer of carding at the Beaver Brook Mills, Collinsville, Mass.

Jim Grew has accepted the position as superintendent of the Spray Woolen Mills, Spray, N. C.

Thomas S. Drury has accepted the position as overseer of weaving for the Northern Ohio Blanket Mills, Cleveland, O., the position he formerly held.

P. D. Connor has accepted the position as overseer of the shearing department at the Burlington Mills, Winooski, Vt.

Otto Anderson has accepted the position as second hand in the weaving department for the Lonsdale Company, Lonsdale, R. I. He was formerly employed at Manchester, N. H.

George E. Fairbanks, who held the position as head carpenter for the Geo. H. Gilbert Mfg. Co., Ware, Mass., has resigned after 38 years of service.

J. L. Irby has accepted the position as chief engineer and master mechanic for the Millfort Manufacturing Company, Fort Mill, S. C.

C. C. Brigman has accepted the position as overseer of spinning at the Capitol City Mills, Columbia, S. C.

A. A. Roddy has accepted a position as overseer of spinning for the Gainesville Cotton Mills, Gainesville, Ga. He was formerly second hand in the spinning department of the Brandon Mills, Greenville, S. C.

Art Anderson has accepted the position as overseer of spinning at the 8th Street Mill, Birmingham, Ala. He was formerly employed with the Merrimack Mill, Huntsville, Ala.

Roy A. Pritchard has accepted the position as overseer of carding at the Huntersville Cotton Mills, Huntersville, Ala. He was formerly connected with the Little Rock Railway & Electric Company, Little Rock, Ark.

W. F. O'Pry has accepted the position as overseer of spinning at the Orangeburg Manufacturing Company, Orangeburg, S. C. He was formerly overseer of spinning at the Olympia Mills, Columbia, S. C.

F. B. Whittaker has accepted the position as overseer of carding, spinning, twisting and spooling at the Banna Cotton Mills, Goldville, S. C.

Thomas Marshall has resigned the position as engineer at the Franklin Mills Corporation, Franklin, Mass., to accept a like one at a mill in Norwich, Conn.

Urias Hardy, overseer of weaving at the Arlington Mill, Lawrence, Mass., has resigned after 22 years of service in that department.

J. Cusworth has accepted a position as overseer of spinning and twisting for the Globe Woolen Co., Utica, N. Y. He was formerly employed in Amsterdam, N. Y.

J. L. Jackson, formerly superintendent of the Paton Mfg. Co., Sherbrooke, Canada, has accepted a position as general manager of the Angus Park Mfg. Co., East Glastenbury, Conn.

Ernest Steinberg has been appointed superintendent of the Worumbo Woolen Mfg. Co., Lisbon Falls, Me.

Warren Taft has resigned the position as second hand in the card room at the East Brady Woolen Co., East Brady, Pa.

John Sharples died at his home at North Dartmouth. He was one of the pioneer mill men of New Bedford, Mass. He was born in Lancashire, England, in 1831.

Robert Macfarlane, employed as printer at the

American Print Works, Fall River, Mass., died at Newport August 5th at the age of 85 years.

Frank W. Austin, formerly of Huntington, Mass., has accepted the position as overseer of dyeing for the Passaic Woolen Mills, Passaic, N. J.

Sidney A. Anderton, overseer of drawing and twisting department at the Atlantic Mills, Providence, R. I., has resigned and accepted a similar position at Philadelphia.

Victor Thewlis, superintendent for the Brigham Woolen Mills, Dayville, Conn., has been appointed superintendent of the Paton Mfg. Co., Sherbrooke, Canada.

John Mercer, superintendent of one of the departments of the Arlington Mills, Lawrence, Mass., has been transferred to the cloth department to succeed Joshua D. Armitage.

P. M. Dodgins has accepted the position as second hand of the spinning room at the Gluck Manufacturing Company, Anderson, S. C. He was formerly section hand at the Cox Manufacturing Company of the same city.

Mr. Wm. Land Turner has resigned the position of general manager of Oldham Mills, Alleghany Ave. and Boudinot St., Philadelphia, Pa., in order to take up the position of general manager of the upholstery branch of the Philadelphia Tapestry Mills, Alleghany Ave. and Front St., of the same city. Mr. Turner was formerly with the Philadelphia Tapestry Mills, and his return to that corporation is recognized by the trade generally as a great compliment to Mr. Turner's ability.

J. H. Stephens has accepted a position as second hand of carding with the Southern Manufacturing Company, Athens, Ga. He was formerly employed in a similar capacity with the Middle Georgia Mills, Eatonton, Ga.

W. H. Cauthon has accepted the position as second hand in the spinning room of the Hillsboro Cotton Mills, Hillsboro, Texas. He was formerly employed at the Premium Cotton Mills, Barton, Ark.

Kristian Weisner resigned his position as overseer of the weaving department at the Livingstone Worsted Company, Washington, R. I. His resignation took effect July 31st. Mr. Weisner was presented with a signet ring and silk umbrella by the help.

John Bellamy has accepted a position as master mechanic for the Newburgh Steam Cotton Mills, Newburgh, N. Y. He was formerly employed at New Bedford, Mass.

H. Redman has accepted a position as overseer of spinning for S. B. & B. W. Fleisher, Philadelphia, Pa.

J. B. Bolton has been appointed overseer of weaving for the Arlington Mills, Lawrence, Mass., to succeed Urias Hardy who recently resigned. Mr. Bolton comes from New Bedford.

J. H. Reynolds, formerly designer and assistant superintendent at the French River Textile Co. Mechanicsville, Conn., has accepted a position as designer for C. L. Blanding Mfg. Co., Providence, R. I.

Mark Trainor, for several years overseer of spinning for the Weetamoe Mills, Fall River, Mass., has resigned and accepted a position at Providence, R. I.

John J. Stratton has accepted a position as chief engineer at the Ray Mills, American Woolen Co., Franklin, Mass.

Frank L. Page, superintendent of the Statesville Cotton Mills, Statesville, N. C., has severed his connection with that company.

Henry Morrisey has accepted a position as overseer of carding for the Hudson River Woolen Mills, Newburgh, N. Y.

Jas. S. McKay, overseer of weaving for the Salmon Falls Mfg. Co., Salmon Falls, N. H., has resigned and is succeeded by J. W. Robbins, of Providence, R. I.

J. Murray has accepted a position as second hand of burling and mending at the French River Textile Co., Mechanicsville, Conn. He was formerly employed at Farnumsville, Mass.

M. Kennitzer, overseer of weaving at the Vernon Woolen Co., Vernon, Conn., has severed his connection with that firm.

Chas. L. White, superintendent of the Marland Mills, Andover, Mass., has resigned and the vacancy has been filled by Phillip H. Yost.

C. B. Coward, overseer of the spinning at the Cherry Mills, Florence, Ala., has resigned to accept a similar position at the Dallas Mills, Huntsville, Ala.

E. N. Tart has accepted the position as overseer of spinning, twisting and warping at the Monroe Cotton Mills, Monroe, N. C.

H. L. Dearman has accepted a position as overseer of carding and spinning in the Leaksville Cotton Mills, Spray, N. C.

Grant Esplow, superintendent of the weaving department of the Oneida Mills at Graham, N. C., has resigned.

L. G. Kelley has been appointed superintendent of the Piedmont Cotton Mills Co., Lancaster, N. C.

Wm. M. Henry, for 28 years in the employ of the Hartford Carpet Corp., Thompsonville, Conn., has severed his connection with that company. He had full charge of the finishing of the Axminster carpet department.

James Ashe has accepted a position as overseer of carding for the Humboldt Woolen Co., Eureka, Cal.

John Morris has resigned as superintendent of the Burlington Silk Mills, Burlington, N. J.

Angus Latham has accepted a position as superintendent of the finishing department for Robert Meyer Co., Philadelphia, Pa. He was formerly employed at the Ellis Hosiery Co.

Henry Marshall has accepted a position with Wm. Barnett & Son, Renssellaer, N. Y. He was formerly employed at Bennington, Vt.

Fred. Barnett has accepted a position as wool sorter at the Hudson Worsted Mills, Hudson, Mass. He was formerly employed at Blackstone, Mass.

Wm. Paul, formerly second hand in the spinning department at the Blackstone Mfg. Co., Black-

stone, Mass., has resigned to accept a position at North Grosvenordale, Mass., where he will have charge of spinning.

Walter Oldham, overseer of finishing for the Terry Mfg. Co., Waterville, Me., has resigned.

John Morrison, Derby, Conn., has accepted the position as second hand in the spinning department of the Meriden Woolen Co., Meriden, Conn.

DEATHS.

Frank Parker Vogl, for thirteen years agent of the Monadnock Mills, Claremont, N. H., died on July 20th at Atlantic City, N. J. He recently resigned the treasurership of the Claremont Gas Light Company, and was a director of the Concord & Claremont Railroad and also of the Boston & Maine Railroad. Funeral services were held at the Cambridge Cemetery Chapel on Tuesday, July 23d.

Roscoe Stetson Washburn, a prominent cotton manufacturer of Connecticut, died at his summer home at Nantucket, Mass., July 27th, after a lingering illness. He is survived by a widow and two sons.

George F. Orr died at his late home on Gardiner St., Worcester, Mass., July 30th, at the age of 69 years. He was born in Paisley, Scotland, and came to this country when 9 years old. He was the founder of the Worcester Bleach & Dye Works, of which concern he has been president since its establishment.

Alvin S. Lyon, agent of the Wood Worsted Mills, Lawrence, Mass., died at the Hotel Preston, Swampscott, Mass., shortly after 1 o'clock Tuesday morning, August 6th. He was one of the oldest mill men in the country, and received an exceptionally large salary. He was born in Methuen, Mass. A son, George A. Lyon, of Boston, survives him.

Albert Littlefield, president of the Littlefield Manufacturing Company, Pawtucket, R. I., died suddenly about 5 o'clock Thursday morning, August 6th on a train running from Saranac Lake to Albany. Deceased was a native of Rhode Island and a son of a former governor of that state. Mr. Littlefield was born in 1863. A widow survives him.

John Maxwell, inventor of the power knitting machine, and president of the Wilton Hygiene Underwear Knitting Co., Philadelphia, Pa., died at his home, 3034 North Fifteenth St. in that city, July 28th of paralysis, after four days' illness. He was born in Roxburghshire, Scotland, February 23, 1814. He is survived by a widow and eight children. Interment will be at Amsterdam, N. Y.

Horatio B. Green, for 18 years overseer at the Hathaway Mills, New Bedford, Mass., died at his home on Saturday, July 28th, at the age of 50 years, after a short illness.

Knight Dexter Cheney, president of the firm of Cheney Brothers at South Manchester, Conn., died at York Harbor, Me., on Tuesday, the 13th inst., of heart trouble. He was born at Mount Pleasant, Ohio, October 9th, 1837, but afterwards moved to South Manchester, where he was educated and later graduated from Brown University. He immediately went into business with his father and uncle in silk manufacturing and held the position as superintendent of the weaving department for a number of years, which brought him in close touch with the employes and he always had their interest very much at heart. He was a director of the company since 1876 and held the position as president since 1894. He leaves a wife and ten children.

Stephen A. Knight, one of the oldest cotton manufacturers of Rhode Island, died at Buttonwoods, Providence, Saturday, August 10, after a long illness. Mr. Knight was a native of Rhode Island, being born in Cranston in 1828. When he was six years old he began work in the cotton mill at Harris, R. I., and continued in the cotton business for 72 years. In 1873 he, with his brothers, B. B. and R. Knight, formed the Hebron Mfg. Co., of which he was president and agent and operated the various plants controlled by the company in Providence, and Hebronville, Dodgeville and Readville, Mass., with conspicuous success. At the time of his death he was a member of the Arkwright and Home Market Clubs of Boston, and of several social clubs in Providence. He was also one of the directors of the National Association of Cotton Manufacturers. He leaves a wife and one daughter.

William N. Blackstone, treasurer of the Attawaugan Cotton Mills, Killingly, Conn., died at the age of 54 years. He was also treasurer of the Totoket Mills at Occum, Conn.

Egypt's Cotton Crop.

Consul-General Lewis Morris Iddings, of Cairo, writing on the subject of Egypt's cotton crop in 1906, says:

"In his estimates for 1907 the English financial adviser in the ministry of finance says that, although the area devoted to cotton has steadily increased of late years, the total amount of the crop has scarcely varied. The record of 1906 does not altogether bear out the theory that over-cropping had seriously impaired the productivity of the soil, for the present cotton season has proved satisfactory. The total crop will probably exceed that of its predecessor by from one-half to three-quarters of a million cantars. (A cantar is 99.05 pounds.) The superiority has been marked in Upper Egypt, where in the season of 1905 the crop was disastrous. In spite of a considerable diminution of area in this region the total crop of 1906 will exceed that of 1905. In quality also it is superior.

"Climate conditions generally over the whole country were favorable and the water supply plentiful. The feature of the year has been the high prices ruling. The season opened auspiciously in this respect, and toward the end of 1906 prices reached an extremely high figure, especially for Joannovich. This fact, together with the increased yield, has meant a gain to the country of some five or six million pounds sterling (pound £ = $4.68) in excess of the profit of last year. In spite of high prices, trade demands in England, the Continent, and America have been good. Demands in the fine-yarn trade have been excellent.

New Publications.

The Textile Fibers; by J. Merritt Matthews, Ph. D. second edition; 480 pages, 5 1/2 by 9; John Wiley & Sons, New York. Price $3.50.

The second edition of this work has been carefully revised, the arrangement and general plan of the first edition being retained. Following is an abstract of the table of contents showing the scope of the work: Classification of the Textile Fibers; Wool and Hair Fibers; The Chemical Nature and Properties of Wool and Hair Fibers; Shoddy and Wool Substitutes; Minor Hair Fibers; Silk; Its Origin and Cultivation; Chemical Nature and Properties of Silk; The Vegetable Fibers; Cotton; The Physical Structure and Properties of Cotton; Chemical Properties of Cotton; Cellulose; Mercerized Cotton; Seed Hairs Other than Cotton; Artificial Silks; Linen; Jute, Ramie, Hemp; Qualitative and Quantitative Analysis of the Textile Fibers;

Embroidery and Tapestry Weaving; by Mrs. Archibald H. Christie; 400 pages, 4 1/2 by 7; The Macmillan Co., New York. Price $2.00.

This work is devoted to the technical and artistic sides of the subject, the history of the art being, we think, wisely omitted. Part I is devoted to embroidery and treats the subject under the following heads: Tools, Appliances and Materials; Pattern Designing; Stitches; Canvas Work; Methods of Work; Gold and Silver Threads; Lettering, Heraldry, and Emblems; Garniture of Work; Practical Directions. Part II treats of tapestry weaving under the following heads: Necessary Appliances and Materials; Preparations for Work; Technique of Weaving. The book is well written and profusely illustrated with excellent engravings.

Technical Lexicon of the Textile Industry and Allied Trades (Technologisches Lexikon der Textil Industrie), German-English; by H. Harras; 408 pages, 3 1/2 by 6 inches; Farbenfabriken of Elberfeld, Germany.

The author of this work was for many years in charge of the English correspondence of Farbenfabriken, the well-known manufacturers of dyestuffs at Elberfeld, Germany. Like all translators of technical material, he found many words in his correspondence that were not defined in the dictionaries or lexicons. This led him to keep a record of such words with their definitions and finally he conceived the idea of publishing the list in book form for the benefit of the textile trade. Death overtook him before this object was accomplished, but his employers, the Farbenfabriken, have completed the work he began and issued it in very convenient book form.

In their introductory note they speak in the highest terms of the industry and intelligence of Herr Harras in compiling the lexicon, and they ask the aid of all who may use the book to point out any errors that they may be corrected in succeeding editions.

The words in the lexicon are classified under the following heads: Fibres; spinning; weaving; finishing; machinery; chemistry. Originating as it did in the daily correspondence of a firm having extensive business relations with every branch of the textile industry throughout the world, it contains definitions of a large number of technical terms in daily use in the trade which are not found in the ordinary lexicon. It will undoubtedly prove of great assistance to all having occasion to translate technical articles relating to the textile and allied industries.

In addition to the German-English lexicon there is an all-German lexicon (Sachwoerterbuch) in a separate volume giving the definition of many additional textile terms found in the German and other languages.

Great credit is due to Farbenfabriken for the publication of these books.

Dyeing in Germany and America; by Sydney H. Higgins; M. Sc., Gartside Scholar; 112 pages, 6 by 9; Sherratt & Hughes, Manchester, England.

Five years ago John Henry Gartside, Esq., of Manchester, England, established what are known as the Gartside scholarships. They are open to British boys between the ages of eighteen and twenty-three years. After a course of study in the University of Manchester the Gartside scholar is sent abroad to study some branch of industry or commerce and report his observations on his return. The allowance to the scholar is £80 a year for the time spent in England; £150 a year on the Continent, and about £250 a year when in America. These reports as a rule are published.

The present volume is a report by Sydney H. Higgins, who was assigned to the investigation of dyeing in Germany and America. The report is well worth reading, not as being from the pen of an expert, who has had opportunities to study his trade in Germany and America, but as being the story of a young man who has seen with the eyes of youth. Undoubtedly his judgment is at fault in some instances and his conclusions are impaired by lack of experience, but there is much to be learned from his statement of what he believes to be the facts. Although handicapped by the reluctance of German and English managers to allow him to inspect their works, in America he states he "was fortunate in seeing most of the mills he particularly wished to visit," and he adds that during his visit to America he "could hardly complain of being told too little."

Handbook of Wage Systems (Handbuch der Loehnungsmethoden); by Dr. Ludwig Bernhard; 234 pages, 6 by 9; Duncker & Humblot, Leipzig, Germany. Price $2.25.

This work deals with methods of paying wages, the subject being considered under the following heads: various kinds of wages; principles of wage systems; day work; job work; piece work; objections of the operatives to piece work; progressive wages (premium systems); collective task wages; collective piece wages; collective premium systems; contract work; associated work; overseers paid by the piece; sub-contract system; objections to sub-contract system; study of principal wage systems; the future of wage systems.

The text is in German, and there are a number of charts illustrating the Halsey and Rowen premium systems.

Glove Trade Directory, 1907-1908; O. H. Bame & Co., Gloversville, N. Y. Price, $2.00.

The fifth edition of this directory gives a carefully revised list of all the glove manufacturers in the United States and Canada, classified according to States and Provinces. In addition there is a list of the pocket-book, bag and belt manufacturers. It forms a very valuable handbook for those desiring to reach these trades.

Business Literature.

Superheated Steam; Power Specialty Co., New York. A pamphlet on superheated steam revised by E. H. Foster, the inventor of the Foster superheater.

This edition contains illustrations of superheaters manufactured by the company as applied to the various types of boilers in use in this country, and also of the direct fired type, ranging from 3,000 h. p. units to small portable superheaters, which may be used for experimental purposes. The pamphlet also contains reproductions of photographs showing the construction of the Foster superheater in detail, and a few pages are devoted to superheated steam specialties, such as piston rod packing, Harter flexible joints, corrugated bronze gaskets and the Willits double acting non-return valve, all of which articles are sold by this company as being specially adapted to plants having superheated steam. At the back of the book are steam tables running to high pressures and temperatures; also tables of velocities of steam in various sizes of pipe at different degrees of superheat, and curves for readily selecting the proper size of steam pipe for any set of conditions, which will be found most useful to the designing engineer.

Green Fuel Economizers; The Green Fuel Economizer Co., Matteawan, N. Y.

This is a reprint of a paper by R. D. Tomlinson before the New York Railway Club, in which are given the results of careful tests made at the Manhattan power station of the Interborough Rapid Transit Co. It is shown that a return of 30 1/2 per cent. on the initial outlay is obtained by the use of the economizer.

Softening and Purifying Water.

The constantly increasing cost of city water supplies becomes a burdensome expense to manufacturers dependent upon them, but since the art of softening and purifying water to fit it for all uses has been so highly developed, supplies near at hand which otherwise could not be used, have been made available.

Chartiers Creek at Carnegie, Pa., is contaminated with sewage drainage from coal mines containing sulphuric acid and carries in solution a considerable quantity of scale-forming matter, so that it is utterly unfit for boiler feed. The Superior Steel Co., located at that place, in 1904 installed a 3,000 h. p. We-Fu-Go water softening and purifying system in which to treat this creek water, which they obtained for the cost of pumping it, thus saving the cost of city water and in addition obtaining a better water. To meet an increase in their boiler plant necessitated by the large increase in their business, a second order increasing the capacity of their present water softening and purifying system from 3,000 h. p. to 7,750 h. p. has been placed with Wm. B. Scaife & Sons Co., of Pittsburgh, Pa.

The success with which Wm. B. Scaife & Sons Co. have met in the installation of the Scaife and We-Fu-Go water softening and purifying systems is best evidenced by the orders received from old customers for additional apparatus. Among them are the following:—

Carnegie Steel Co., five systems; American Sheet & Tin Plate Co., eighteen systems; New York State Steel Co., two systems; Crucible Steel Co. of America, three systems; Atlas Portland Cement Co., two systems; Beveridge Paper Co., two systems; American Bridge Co., two systems; Illinois Central R. R. Co., ten systems; Chicago & Eastern Illinois R. R. Co., two systems; American Steel & Wire Co., two systems; Pennsylvania Salt Mfg. Co., two systems; National Home for D. V. S., three systems; Chicago, Rock Island & Pacific Ry. Co., fifteen systems.

Large Order for Nasmith Combers.

The Clark Thread Co. at Newark, N. J., have been investigating the comber question for the past year and have had different makes of combers under observation at their mill. After a year's trial they have recently placed an order with Stephen C. Lowe of Boston, Mass., agent for John Hetherington & Son, Ltd., for fifty-four 12 1/2-inch lap Nasmith combers with the necessary ribbon lap and sliver lap machines to comb cotton for 65,000 spindles on fine work. This order brings the total number of Nasmith combers ordered or in use in the United States to considerably over five hundred.

Mechanical Draft.

The tests made by the United States Geological Survey at the St. Louis Exposition to determine the actual steam-making values of American fuels are to be continued with a similar plant at the Jamestown Exposition. The report on the St. Louis tests, which fills three large volumes, is devoted largely to fuels from the Middle West and Western coal fields. The plant now being erected at Jamestown will give an opportunity for analyzing, testing and placing on record in a similarly thorough and comprehensive manner the coals from the Eastern fields. The Jamestown plant will obtain three 300 h. p. boilers, each equipped with an engine-driven 100-inch mechanical draft fan and a 35-foot stack both supplied by the Green Fuel Economizer Company, of Matteawan, N. Y. The fans will be so controlled that the draft can be regulated as desired by hand or automatically. The wheels of the fans measure 5 ft. in diameter by 2 2/3 ft. wide at the tips of the blades and are driven by 6 by 7 inch Green vertical centre crank engines. The laying out of the mechanical draft plant was entrusted by the Survey to the Freen Fuel Economizer Company.

Mill Supplies.

R. H. Hood, long known as a manufacturer of worsted machinery for preparing, finishing gills and drawing boxes, at 1842-46 Germantown Ave., Philadelphia, reports that he is extremely busy on combs and general machinery work. Mr. Hood also states that he has recently opened a new department for the sale of general mill supplies and is now the agent for John White & Sons, English roller covering and apron leathers, English oak tanned and chrome leathers. He is also handling a line of domestic leather belting and is in a position to supply manufacturers with anything in this line at short notice.

Metallic Packing.

The Power Specialty Company, 111 Broadway, New York, has recently secured the exclusive sale of Duval metallic packing in this country, Canada and Mexico. It will carry a complete stock of this packing in standard sizes, enabling orders to be filled promptly.

This company has just issued a new and enlarged catalogue descriptive of the Foster superheater and other steam specialties, including the packing mentioned. Copies will be forwarded upon request.

The Jamaica Dye & Bleach Works.

The Jamaica Dye & Bleach Works, Jamaica Plain, Mass., have already gained for themselves an enviable reputation for the quality of work turned out. They are dyers, bleachers and dressers of cotton skein yarn, and also wind either cones or tubes on Foster's and Universal machines. They pay particular attention to colored work and with their improved facilities are in a position to turn out their orders promptly and in a very satisfactory manner. We take pleasure in recommending them to the trade.

Cost of Loom Supplies.

We recently saw some figures from the books of a mill, running 800 Northrop looms, which may be interesting as a basis for comparison for others:

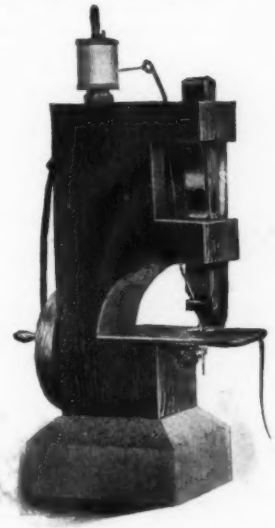
Shuttles, average cost per loom per year,	.4697
Strapping, average cost per loom per year,	.1884
Castings,	.1908
Oil,	.3643
Sundries,	.5696
	$1.7828

COTTON CHATS.

The American Moistening Company, Boston, Mass., report the largest volume of business in the history of their organization, their orders since Jan. 1, 1907, calling for over 2,700 humidifiers.

The James E. A. Gibbs Model Sewing Machine.

This year the Willcox & Gibbs Sewing Machine Co. celebrate the 50th anniversary of the granting of their first patent in 1857. Before that time there was no practical single thread sewing machine to lighten the burden of woman's work. We believe, therefore, that our readers will be interested in the illustration of the crude model made by the inventor, James E. A. Gibbs in the year 1855, from which was evolved the Willcox & Gibbs automatic sewing machine, which is now found in more than half a million homes.



The individuality of Mr. Gibbs's work, always marked, is shown in the first model in the curve or arch, afterward developed into the perfect form of what is now known as the G-shaped machine head. This design has been incorporated in the company's trade mark for many years and forms one of the two initial letters of the company name in their monogram.

Whittled out of a block of wood and otherwise roughly finished, the model contains in elementary form the rotating hook. In its final development this hook so accurately receives and discharges the loop of thread from the needle that for manufacturing purposes a speed can be attained of over 3,000 perfect loops or stitches from its single thread.

The desirability and importance of regulating the thread tension by automatic means, instead of depending upon the will of the operator, soon received the combined attention of Mr. Gibbs and his associates, Messrs. Willcox and Carlton, who devised the ingenious means still in use. By following the simple directions on the cloth plate, the tension is automatically adjusted so that the machine will sew with equal facility and perfection the flimsiest and the heaviest fabric, say from a single thickness of chiffon to twelve or more plies of muslin. The strength and elasticity of the W.

& G. stitch, greater than that in any other system, is insured by this device.

To meet the many special needs of the manufacturing trades the machine is modified in some respects, but retains all those unique features that have served to build up its reputation and have so successfully withstood the test of time.

In passing, our readers are reminded that one of the latest successes of the Willcox & Gibbs Sewing Machine Co. is their high speed lockstitch machine, having a capacity of 3,500 to 4,000 perfect stitches per minute. Their entry into a field already occupied by lockstitch machines of several types was due to their belief that the more exacting requirements of the manufacturing trade made it possible to exploit a lockstitch machine of the finest mechanism, which should combine in the highest possible degree maximum speed, smooth running, superior product and low cost of maintenance. Their confidence has been rewarded, for the machine finds ready sale among leading manufacturers of shirts, shirt waists, ladies' belts, muslin and knit underwear, millinery, collars, cuffs, umbrellas, curtains, etc.

A New Chemist in Philadelphia.

Dr. Frederick Dannerth, late assistant professor of chemistry at the Philadelphia Textile School, announces his entrance into the field of consulting and analytical experts, specializing in textile manufacturing and dyestuff and coal-tar industries. In training and experience Dr. Dannerth is well equipped to handle the chemical problems of these branches of the industrial world in an expert manner. He has established himself at 204 Walnut Place and is prepared to furnish advice and reports to the trade. Professional visits to mills will be made by special arrangement.

Linen Thread.

The Courtrai Linen Thread Co. of Frankford, Pa., have purchased the large and commodious mill and the real estate connected with it at the corner of Unity and Elizabeth Streets, Frankford, Pa. The mill has been put in thorough repair and will be in full running order by January 1. The president of this company is Hughes Fawcett, 115 Franklin St., New York, one of the most experienced linen thread men in the states. The treasurer and general manager is Keith K. Skene, also well and favorably known in this branch of business. The growth of this company has been phenomenal. They have been obliged to change their location three times in the last few years on this account, and at the present time, in addition to the machinery they are operating on three floors of the Sidebotham Mill, have a quantity in storage and on order in Ireland. This company manufactures all the various classes of linen thread, in skeins, tubes, spools, etc., for all purposes, including shoe thread, gilling thread, spool thread, harness thread, carpet thread, etc., etc., and in addition have a well equipped department for cotton, silk and worsted twisting, tubing, spooling, skeining and polishing for the trade. Since its organization this company has turned out the highest class of goods and their trademark, "The Broad Arrow," is a brand that stands for sterling merit.

Removal Notice.

On account of the continually increasing demand for Azonil and Zorine, Edward C. Foster, manufacturer and dealer in dyestuffs and chemicals, has been obliged to move from 357 Eddy Street, Providence, R. I., to much larger quarters at 273 Eddy Street.

Colored Enamel Paint for Textile Machinery.

Attention is called to the announcement of the Nubian Paint & Varnish Co., Chicago, Ill., in another part of this issue. The company manufacture enamel paint specially adapted for machinery. It dries with a high gloss in about three hours, which is very desirable when quick finishing is required. Sample cards and full directions will be given on application to the company.

A New Material for Sizing.

The Union Casein Co. of Philadelphia manufacture Shlac-Lac glue for sizing, which is colorless, transparent and said to become more or less waterproof when dry. The advantages claimed for this sizing material are quick drying properties, resistance to dampness, and proof against mildew. It penetrates the pin holes and holds the filler in suspension where glue or mineral matter is used, giving the goods increased weight and stiffness with a maximum amount of inflexibility. The manufacturers state that it gives a smooth, firm, and yet elastic, yarn for weaving and is especially useful in mixing with starch. Samples for testing will be supplied to manufacturers without charge.

Dryers.

The American Drying Machinery Co., 19th and Westmoreland streets, Philadelphia, have recently shipped one of their 20th century looping dryers to the Watson Manufacturing Co., Brantford, Ontario, Canada. The company also report within the last two months they have shipped three of their stock dryers to the following well-known mills in the South: the Hamilton-Carhartt Cotton Mills, Rock Hill, S. C.; McIntosh Mills, Newman, Ga., and A. M. Agelasto, Norfolk, Va. Truck dryers have been shipped to the Marston Worsted Co., Skowhegan, Maine; William Henderson & Co., Bristol, Pa., and the Bay State Thread Works, Springfield, Mass. In addition to these shipments the company have placed with the Lawrence Knitting Co., of Lawrence, Mass., one of their latest improved hosiery dyers.

The company also desire to announce to the trade that they are now building five of their new 20th century French pickers.

Recent Textile Patents.

WOVEN FABRIC. 860,707. William L. Turner, Philadelphia, Pa.

WOVEN FABRIC. 860,708. William L. Turner, Philadelphia, Pa.

BOBBIN NOTCHING MACHINE. 862,535. Ira A. Blood, Methuen, Mass., assignor to U. S. Bobbin & Shuttle Co., Providence, R. I.

BOBBIN AND SPINDLE CONNECTOR. 862,514. John Roney and John C. Rae, Woonsocket, R. I.

BOBBIN AND SPINDLE CONNECTOR. 862,586. John Roney and John C. Rae, Woonsocket, R. I.

BRAIDING MACHINE. 861,694. Alfred Attenborough, Bristol, Conn., assignor to the Blakesley Novelty Co., Bristol, Conn.

BRAIDING MACHINE. 862,436. Victor Beauregard, New York, N. Y., assignor to American Circular Loom Co., Chelsea, Mass.

CARD CLOTHING. Means for Tacking on. 862,374. Addison Arnold, Charlotte, N. C., assignor to J. W. Conway, Charlotte, N. C.

CLOTH CUTTING MACHINE. 861,793. George L. Ballard, Norristown, Pa., assignor to Wildman Mfg. Co., Norristown, Pa.

COMBS. Drawing Off Mechanism for Circular. 862,980. Albert Long, Lawrence, and Robert Foster, Methuen, Mass.

COTTON CLEANING FEEDER. 862,893. John R. Fordyce, Little Rock, Ark.

COTTON GIN BRUSH. 862,663. William W. Robinson, Alexander City, Ala.

COTTON PICKING MACHINE. 862,373. John F. Appleby, Chicago, Ill.

DYEHOUSES OR BLEACHERIES. Ventilating. 862,981. John H. Lorimer Philadelphia, Pa.

DYEING APPARATUS. 861,649. William Hannah, Paterson, N. J.

DYEING MACHINE. 863,460. Robert P. Smith and George E. Drum, Philadelphia, Pa.

FABRIC AND GARMENT. 862,613. Arthur J. Cumnock, Rye, N. Y.

FIBER DECORTICATING Machine, Manila. 863,906. Carolus E. Dailey, Brooklyn, N. Y.

FIBER. Productions of Brown Shades on the. 863,761. Henri Schmid, Mulhouse, Germany, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany.

FILAMENTS OUT OF VISCOSE or Similar Viscous Material. Forming. 863,793. Charles A. Ernst, Lansdowne, Pa., assignor to Silas W. Pettit, Philadelphia, Pa.

LACE BRAIDING MACHINE. 861,703. Gilbert H. Blakesley, Bristol, Conn., assignor to the Blakesley Novelty Co., Bristol, Conn.

LOOM. 862,351. Rufus H. Sawyer, Malden, Mass.

LOOM. 863,945. Otto W. Schaum, Philadelphia. Pa.

LOOM FILLING DETECTOR Mechanism. 861,639. Joseph T. Cyr, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM HEAD MOTION. 862,668. John J. Shanahan, Centerville, R. I.

LOOM PROTECTOR MECHANISM. 861,642. Maurice Dumont, Aurora, Ill., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM REED SUPPORT for Warp Drawing Machines. 862,474. Edgar F. Hathaway, Boston, Mass., assignor to American Warp Drawing Machine Co., Boston, Mass.

LOOM SHED FORMING Mechanism. 863,644. William H. Redding, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM SHUTTLE. 861,335. John Varley, Jamestown, N. Y.

LOOM WARP STOP MOTION. 863,130. George B. Ambler, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

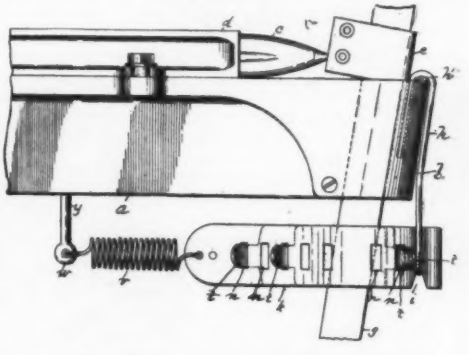
LOOM WARP STOP MOTION. 863,131. William F. Andrews, Greenwood, S. C., assignor to Draper Co., Hopedale, Mass.

LOOM FOR WEAVING Double Pile Fabrics. 862,968. Alfred Heald, Philadelphia, Pa.

LOOM FOR WEAVING Pile Fabrics. 862,654. Frederick C. Pfeiffer, Philadelphia, Pa., assignor to E. F. Timme & Son, New York, N. Y.

LOOMS. Picker Check for. 859,554. Millard F. Field, Winthrop, Mass.

The present invention relates to that class of picker-checks in which the frictional resistance is applied on a side of the stick. It comprises a plurality of layers of straps of leather, or its equivalent, on each side of the path of the stick, such layers on each side consisting of a main

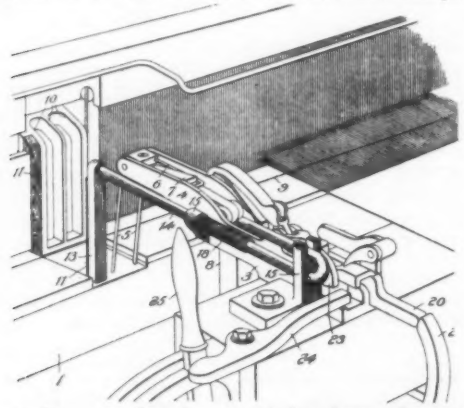


layer and one or more supplemental layers projecting into the path of the picker-stick, the main layers having their rear or inner ends directly secured to springs disposed substantially in line with the checking straps.

In operation, the picker-stick on its backward movement presses back the straps s on opposite sides with which it comes into contact, and said straps s press back the straps p, and the straps s and p operate directly by means of their tongues on the main straps k, which spread to a greater or less extent, and at the same time expand to a corresponding degree the spiral springs v. Thus there is provided a gradually increasing frictional resistance until approximately the end of the stroke is reached, and then the stick is prevented from rebound. This resistance is regulated according to the conditions, in two ways, viz., by applying additional supplemental straps to the main strap k, and by placing the ends or tongues of the supplemental straps into holes which are nearer together, thus causing the straps to protrude farther into the path of the picker-stick.

LOOMS. Weft of Thread-Holding Device for. 859,570. Francis A. Mills, Lawrence, Mass.

The invention which forms the subject of this patent is directed to means to prevent the forcing of the weft or filling thread through the grid by the weft or filling fork in the operation of a loom. It comprises a slidable instrument actuated by the movement of the lay and having the function of and forming a member of a clamp, the co-acting member of which is carried by the lay, whereby in the operation of weaving the weft or filling thread is seized and held between the clamping



members so that it cannot be drawn from the shuttle toward the grid and forced through it. By this means that portion of the weft or filling thread which crosses the grid between said clamping members and the shed, will be maintained taut insuring thereby the uninterrupted tilting of the weft fork in maintaining its function effective and certain.

MEASURING MACHINE. Cloth. 864,070. Charles S. Botsford, Peterboro, Ontario, Canada.

REELING THREADS into Skeins. 863,766. Montgomery Waddell, New York, N. Y., assignor to Silas W. Pettit, Philadelphia, Pa.

SHUTTLE BOX MOTIONS. Multiplier Mechanism for. 863,862. Leslie W. Lutton, Paterson, N. J.

SILK DEGUMMING MACHINE. 862,326. Carl Ferenbach and George F. Macfarlane, Wilkesbarre, Pa.

SPINNING MULE. 862,201. Wm. D. Rundlett, North Andover, Mass., assignor to Davis & Furber Machine Co., North Andover, Mass.

SPINNING AND TWISTING MACHINES. Thread Guiding Means for. 863,218. John E. Prest, Melrose, Mass.

WATERPROOFED LINEN. 861,435. Eduard A. Clossman, Tegel, Germany.

WOVEN FABRIC. 821,056. James K. Dalkranian, New York, N. Y., assignor to United States Persian Carpet Co., New York City.

Textile Trade-Marks Registered.

"Alhambra." Woven Cotton Plaids. Neuss Hesslein & Co., New York City.

"Aone." Silk Dress Goods. Mendelson Bros. Inc., San Francisco, Cal.

"Arnold." Knitted Underwear for Men, Women and Children. Novelty Knitting Co., Albany, N. Y.

"Brooks." Sewing Cotton. Jonas Brooks & Bros. Ltd., Meltham, England.

"Cymbeline." Chiffons. Grace Pascal Ford, Mount Vernon, N. Y.

"Florentines." Silk Piece Goods. Cheney Bros., South Manchester, Conn.

"Keepkool." Knitted Underwear, Sweaters, Shirts and Jackets. Fuld & Hatch Knitting Co., Albany, N. Y.

"Ko Ko Ko." Bleached, Gray and Printed Cotton Piece Goods and Blankets. Jackson Co., Nashua, N. H.

"Lady Broadway." Hosiery. A. B. Andrews Co., New York, N. Y.

"Mirror." Spinning Rings for Textile Machinery. Draper Co., Hopedale, Mass.

"Regal." Hosiery. Lawrence Neebe, Boston, Mass.

"Semper Idem." Woven Cotton Piece Goods. Hill Mfg. Co., Lewiston, Maine.

"Waddene." Cotton Batting. The Southern Cotton Oil Co., Jersey City, N. J.

"Wearweal." Silk and Silk Mixed Piece Goods. Susquehanna Silk Mills, New York, N. Y.

Jute and Water.

The milk consumers of London are complaining that they have to pay $150,000 a year for added water. What are they complaining about? The jute trade in Calcutta cheerfully paid at least $6,830,000 this past season for added water purposely put into the jute they purchased from the Swadeshi patriots of Bengal, and principally of the New Province. The two L.-G.'s have apparently given the matter up as a bad job, and have practically declared their complete inability to cope with the monstrous daylight robbery referred to. A Loose Jute Brokers' Association with an authorized contract form, such as was recently suggested in these columns, would go far to extirpate the wet jute business; and, what is perhaps equally important, would also extirpate the undesirable broker.—"Capital" of Calcutta.

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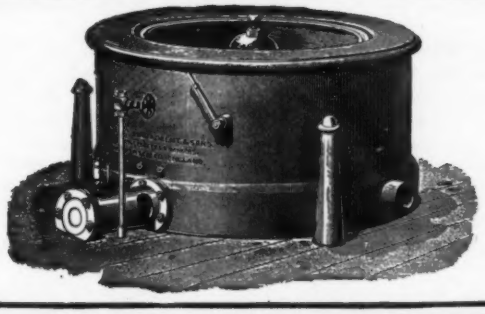

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Half of this is from tight belts.

Cling-Surface permits every belt to be run easy and carry fullest loads and turns this half from overcoming friction to doing work.

Besides preserving the belts, saving oil, labor and fuel, and giving steady, even speed at machines.

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We should like to call and look over your plant. No charge for inspection. No proposition to submit to you unless we can guarantee results.

Our fifteen years experience in stoker, boiler, power, heating, ventilating and drying engineering, is basis of our advice to clients.

Buyers' Index.

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Accounts Financed.
Cathrall, W. M.

Air Moistening System.
American Moistening Co.
Bell Pure Air & Cooling Co.

Architects and Mill Engineers.
Ferguson, John W.
Main, Chas. T.
Suck, Adolph.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Floors.
Simpson Bros. Corporation.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
American Drying Machinery Co.
Harwood, Geo. S., & Son.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.

Automatic Warp Tying Machines.
Barber-Colman Company.

Bale Ties.
Acme Steel Goods Co.
DeHaven Manufacturing Co.

Balling Machine.
Torrance Mfg. Co.

Bandings.
——See under Yarns.

Baskets.
Lane, W. T., & Bro.
Morris & Co.

Belting.
Chicago Belting Co.
Gandy Belting Co.
Main Belting Co.
Shultz Belting Co.
——See also Mill Supplies.

Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jas., Crucible Co.
Shultz Belting Co.
Stephenson Mfg. Co.

Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.

Bindings.
——See Tapes and Braids.

Bleaching Kiers.
Allen, Wm., Sons Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Roessler & Hasslacher Chemical Co.

Blowers and Blower Systems.
American Blower Co.
Dean Bros. Steam Pump Works.
Green Fuel Economizer Co.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Sterling Pipe & Blower Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Leigh, Evan A.
Tebbets, E. L., & Co.
Wilson & Co.

Boiler Cleaners.
Johns-Manville Co., H. W.

Boiler Compound.
Johns-Manville Co., H. W.

Boiler Inspection and Insurance.
——See Steam Boiler Insurance.

Boilers.
——See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Box Shook.
Connecticut Box Company.

Box Strapping.
Acme Steel Goods Co.
De Haven Mfg. Co.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Brazing.
American Ferrofix Brazing Co.

Bridges.
Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.
Parks & Woolson Machine Co.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Taunton-New Bedford Copper Co.
Textile Finishing Mchy. Co.
——See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.
Morris & Co.

Carbonizing.
Riverdale Woolen Co.

Carbonizing Machinery.
American Drying Machinery Co.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Tolhurst Machine Works.

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Ashworth Bros.
Bowes, L. M., Co.
Leigh, Evan A.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Stoddard, Haserick, Richards & Co.

Carded Cotton.
Blaisdell, S., Jr., Company.

Card Feeds.
——See Automatic Feeds.

Card Grinding Machinery.
Entwistle, T. C., Co.
Leigh, Evan A.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Stoddard, Haserick, Richards & Co.

Carders' Tools.
Brown, Wm. H., Co.

Carpet Machinery.
Altemus, Jacob K.
Curtis & Marble Machine Co.
Parks & Woolson Machine Co.
Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.

Case Lining (Waterproof).
National Waterproofing Co.

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American Ferrofix Brazing Co.

Castings.
Farrel Foundry and Machine Co.
Schofield, Wm., Co.

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Cell Drier Machine Co.

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Roessler & Hasslacher Chemical Co.
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Chemists.
Danneth, Frederic.
Little, Arthur D.

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Cling Surface Mfg. Co.

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Cameron Machine Co.

Cloth Stretchers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Leyland, Thomas, & Co.
Textile Finishing Machinery Co.

Clutches.
American Tool & Machine Co.
Hunter, James, Machine Co.

Combs (Wool and Cotton).
Hood, R. H.
Jefferson, Edward & Brother.
Leigh, Evan A.
Lowe, S. C.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

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Gilbreth, Frank B.
Simpson Bros. Corporation.
Suck, Adolph.

Condensers.
Dean Bros. Steam Pump Works.

Consulting Electrical Engineer.
Puffer, William L.

Conveying Systems.
Sturtevant, B. F., Co.

Conveyors, Pneumatic.
——See Blowers & Blower Systems.

Cop Spindles.
American Textile Specialty Mchy. Co.

Cop Tubes.
American Textile Specialty Mchy. Co.
——See Paper Tubes.

Copper Print Rollers.
Taunton-New Bedford Copper Co.

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Badger, E. B., & Sons Co.

Copper Work for Dyers.
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Textile Finishing Machinery Co.

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National Brake & Clutch Co.

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Irwin, Thos. W., Mfg. Co.

Corrugated Iron and Steel.
Scaife, W. B., & Sons.

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Wright, R. A.

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Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Stoddard, Haserick, Richards Co.
Tolar & Hart.

Cotton Machinery.
Altemus, Jacob K.
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American Textile Specialty Mchy. Co.
American Drying Machinery Co.
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Barker, James.
Butterworth, H. W., & Sons Co.
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Firth, William, Co.
Hetherington, John, & Sons, Ltd.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kip-Armstrong Co.
Kitson Machine Co.
Leigh, Evan A.
Lowe, S. C.
Lowell Machine Shop.
Mason Machine Works.
Parks & Woolson Machine Co.
Metallic Drawing Roll Co., The.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Providence Machine Co.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

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Zurn, O. F., Co.

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Power Specialty Co.

Dextrine.
Stein, Hirsh & Co.

Dobbies.
Crompton & Knowles Loom Works.
Kilburn, Lincoln & Co.
Stafford, G. W., Mfg. Co.

Draughtsmen.
Cameron Machine Co.

Drawing Rolls.
Hood, R. H.
Jefferson, Edward & Brother.
Metallic Drawing Roll Co., The.

Drying Machinery.
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Hunter, Jas., Machine Co.
Jefferson, Edward & Brother.
Kenyon, D. R., & Son.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.

Drying Boards.
Bull, William C.
Pearson, J. T.

Dusters.
——See Wool and Waste Dusters.

Dust Collectors.
Philadelphia Drying Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Firth & Foster Co.
Germania Dye Works.
Globe Dye Works Co.
Home Bleach & Dye Works.
Ingrahamville Dye Works.
Lorimer's, The Wm. H., & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Rowland, Samuel.
Scranton Yarn Finishing Co.
Western Thread & Dye Works.

Dyeing, Drying, Bleaching and Finishing Machinery.
Allen, William, Sons Co.
American Blower Co.
American Drying Machinery Co.
American Dyeing Machine Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Cohnen Dyeing Machine Co.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Gessner, David.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunt, Rodney, Machine Company.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh, Evan A.
Leyland, Thos., & Co.
Parks & Woolson Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Sirocco Engineering Co.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Floors.
Simpson Bros. Corporation.

Dye House Trucks.
Bailey, Frank.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Atteaux, F. E., & Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Continental Color & Chemical Co.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hassiacher Chemical Co.
Solvay Process Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electrical Engineer (Consulting.)
Puffer, William L.

Electrical Heating Devices.
Johns-Manville Co., H. W.

Electrical Supplies.
Johns-Manville Co., H. W.
Pettingell-Andrews Co.

Electric Driven Pumps.
Dean Bros. Steam Pump Works.

Electric Fans.
American Blower Co.
Crocker-Wheeler Co.
General Electric Co.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Northern Engineering Works.
Yale & Towne Mfg. Co.

Electric Lamps.
Pettingell-Andrews Co.

Electric Lighting.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Crocker-Wheeler Co.
General Electric Co.
Peerless Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Elevators.
Salem Elevator Works.

Embossing Machines.
Cameron Machine Co.

Embroidery Machines for Hosiery and Knit Goods.
Walther, Otto.

Employees' Time Recorders.
Pettes & Randall Co.

Enamels.
Nubian Paint & Varnish Co.

Exhaust Heads.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Expansion Joints.
Power Specialty Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co.
Harrison Safety Boiler Works.
Scaife, W. B., & Sons.

Feed Water Pumps.
Dean Bros. Steam Pump Works.
Gould's Mfg. Co.

Feed Water Purifiers.
Harrison Safety Boiler Works.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.

Feeds.
——See Automatic Feeds.

Felt Hardeners.
Farrel Foundry and Machine Co.

Felting Machinery.
Farrel Foundry and Machine Co.

Fibre Spools.
Cell Drier Machine Co.
Rhode Island Fibre Spool Co.

Filters.
American Water Softener Co.
Norwood Engineering Co.
Phila. Water Purification Co., The.
Scaife, W. B., & Sons.

Alphabetical Advertising Index, with page numbers, follows this list.

All types of

Sturtevant Fans

are equipped with electric motors of Sturtevant make

In the smaller sizes the specially designed motor, either open or enclosed, is attached directly to the side plate of the fan.

B. F. STURTEVANT CO., BOSTON, MASS.

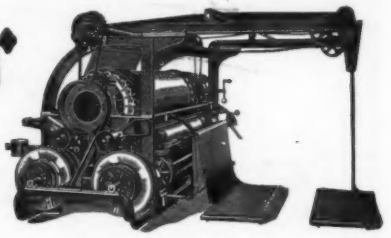
General Office and Works, Hyde Park, Mass.

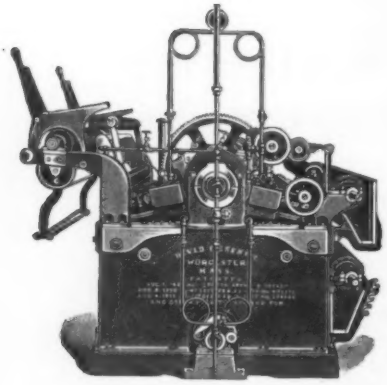
NEW YORK PHILADELPHIA CHICAGO CINCINNATI LONDON

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Rotary Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Pneumatic Separators, Fuel Economizers, Forges, Exhaust Heads, Steam Traps, etc. 561

David Gessner

Worcester, Mass.

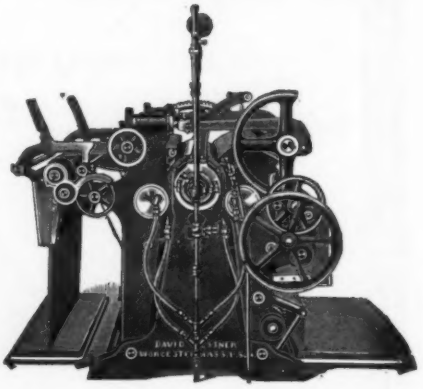




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Finishing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.
Fire Brick.
Borgner, Cyrus, Co.
Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.
Fire Hose.
Eureka Fire Hose Co.
Fire Hydrants.
Norwood Engineering Co.
Fire Insurance.
Home Insurance Co.
Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.
Irwin, Thos. W., Mfg. Co.
Fire Pumps.
—See Pumps.
Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combes-Barbour, Ltd.
Fluted Rolls.
Hood, R. H.
Leigh, Evan A.
Jefferson, Edward & Brother.
Riley, C. E., Company.
Thurston, A. G., & Son.
Flyers.
Bodden, Wm., & Son, Ltd.
Hopkins Machine Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Forges.
Sturtevant, B. F., Co.
Forwarders.
Salvator Transfer, Inc.
Friction Clutches.
National Brake & Clutch Co.
Friction Cones.
Evans, G. Frank.
Friction Rings.
National Brake & Clutch Co.
Fuel Economizers.
Green Fuel Economizer Co.
Sturtevant, B. F., Co.
Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Furnaces (Automatic Smokeless).
Murphy Iron Works.
Garnetts.
Leigh, Evan A.
Smith & Furbush Machine Co.
Gas Blowers and Exhausters.
Sturtevant, B. F., Co.
Gas Engines.
Jones, Lewis.
Gaskets (Superheated Steam).
Power Specialty Co.
Gassing Machines.
Stubbs, Joseph.
Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.
Gears.
Farrel Foundry and Machine Co.
New Process Raw Hide Co.
Philadelphia Gear Works, Inc.
Gear Cutting.
Farrel Foundry and Machine Co.
Gear Cutting Machine.
Whiton, The D. E., Co.
Generating Sets.
Crocker-Wheeler Co.
Sturtevant, B. F., Co.
Glue.
Union Casein Co.
Grease.
Cook's, Adam, Sons.
Grease Cups.
Cook's, Adam, Sons.
Grids for Lappers.
Schaellibaum, R., Co.
Hand Protector.
Hall, F. W.
Heddles.
Steel Heddle Mfg. Co.
Stoddard, Haserick, Richards & Co.
Hoisting Apparatus.
Economy Engineering Co.
Northern Engineering Works.
Yale & Towne Mfg. Co.
Hosiery Boards.
Pearson, J. T.
Hosiery Labels.
Beck, Charles, Paper Co.
Kaumagraph Company.
Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.
Hydraulic Rams.
Power Specialty Co.
Hydro Extractors.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Hunt, Rodney, Machine Company.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.
Illuminating Engineer.
Puffer, William L.
Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.
Insurance (Casualty, Fire and for Loss of Profits.)
Home Insurance Co.
Maryland Casualty Co.
Investments.
Cross Creek Coal Co.
Invoices Discounted.
Cathrall, W. M.
Jacquards.
Halton's, Thomas, Sons.
Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.

Alphabetical Advertising Index, with page numbers, follows this list.

Steel Heddle Mfg. Co.

2110 W. Allegheny Avenue

Philadelphia, Pa.

Manufacturers of

Steel Harness and Heddle Frames

Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines, Crochet, Etc.
Hunt, Rodney, Machine Company.
Langston, Samuel M.
Merrow Machine Co., The.
Nye & Tredick Co.
Robinhold Machine Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jonckes, E., Mfg. Co.
Jones, Lewis.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Ruth Machine Co.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walter & Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's, Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Jarrard Needle Co.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Ruth Machine Co.
Wardwell Needle Co.

Labeling Machines.
Beck, Chas., Paper Co., Ltd.

Lamps, Incandescent.
General Electric Co.
Pettingell-Andrews Co.
Westinghouse Electric & Mfg. Co.

Lawyers (Mercantile).
Yeomans & Ironside.

Leather for Textile Use.
Bowes, L. M., Co.

Loom Pickers.
Garland Mfg. Co.

Looms.
Crompton & Knowles Loom Works.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
Stafford, Geo. W., Co.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Beattie Machine Works.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricants.
Cook's, Adam, Son.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.

Lubricators.
Detroit Lubricator Co.

Lumber (Box, Etc.).
Connecticut Box Co.

Lumpers.
Gerry, George, & Son.
Schofield, Wm., Co.

Machine Designers.
Cameron Machine Co.

Machinery Dealers.
Jefferson, Ed., & Bro.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Stead, Arthur.
Taylor, James.

Machinists.
Cameron Machine Co.

Machinists' Tools.
Whitin, The D. E., Co.

Mails.
Walder, J.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.
Parks & Woolson Machine Co.

Mechanical Draft.
American Blower Co.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

Mechanical Draughtsmen.
Cameron Machine Co.

Mechanical Engineers.
American Blower Co.
Gilbreth, Frank B.
Main, Chas. T.
Philadelphia Drying Machinery Co.
Prather Engineering Co.
Sturtevant, B. F., Co.

Mechanical Stokers.
Murphy Iron Works.

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Mercerizers.
Globe Dye Works Co.
Home Bleach & Dye Works.
Lorrimer, Wm. H., Sons Co.
Mercerizing Machinery.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Parks & Woolson Machine Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.
Metallic Packing.
Power Specialty Co.
Mill Builders and Engineers.
Ferguson, John W.
Mill Supplies.
American Supply Co.
Bamford & Smith.
Barker, James.
Buckley's, Benjamin, Sons.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Jefferson, Ed., & Bro.
Lane, W. T., & Bro.
Leigh, Evan A.
Main Belting Co.
Morris & Co.
Murphy, E. W., & Co.
Philadelphia Drying Machinery Co.
Riley, C. E., Company.
Richardson Bros.
Schaellibaum, R., Co.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
Ward & Vandegrift.
Walworth Manufacturing Co.
Mineral Wool.
Johns-Manville Co., H. W.
Motors.
——See Electric Motors.
Napping Machinery.
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Gessner, David.
Jones, Lewis.
Leigh, Evan A.
Parks & Woolson Machine Co.
Whiteley, William, & Sons, Ltd.
Noils (Silk).
Malcolm Mills Co.
Ryle, Wm., & Co.
Oil and Waste Saving Machines.
Oil & Waste Saving Machine Co.
Oil Cups.
Walworth Manufacturing Co.
Oil Engines.
International Oil Engine Co.
Oils.
Borne, Scrymser Co.
Cook's, Adam, Son.
Excelsior Wool Oil Compond Co.
Harding & Fancourt.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.
Zurn, O. F., Co.
Overhead Track and Trolley Systems.
Northern Engineering Works.
Overseaming Machines.
Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.
Packings (Asbestos Steam).
Johns-Manville Co., H. W.
Packings (Hydraulic and Pneumatic).
Detroit Leather Specialty Co.
Packings (Metallic).
Power Specialty Co.
Paints (Wood Preserving).
Carbolineum Co.
Paints and Varnishes.
Nubian Paint & Varnish Co.
Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.
Paper.
Merwin Paper Co.
Richardson Bros.
Smythe, J. L. N., Paper Co.
Paper Boards.
Merwin Paper Co.
Smythe, J. L. N., Paper Co.
Paper Box Machinery.
Beck, Chas., Paper Co., Ltd.
Langston, Samuel M.
Patent Solicitors.
Crosby & Gregory.
Howson & Howson.
Perforated Metals.
Hopkins Machine Works.
Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.
Pipe and Boiler Covering.
Johns-Manville Co., H. W.
Pipe Threading Machines.
Oster Mfg. Co.
Pipes and Fittings.
Pancoast, Henry B., & Co.
Scaife, W. B., & Sons.
Walworth Manufacturing Co.
Plastic Cement.
Griffin Roofing Co.
Pneumatic Conveying.
——See Ventilating.
Portable Hoists.
Economy Engineering Co.
Power Plant Engineers (Steam, Electric and Water).
Prather Engineering Co.
Roberts & Abbott Co.
Power Transmission Machinery.
Almond, T. R., Mfg. Co.
American Drying Machinery Co.
American Mfg. Co.
American Pulley Co.
Cell Drier Machine Co.
Cresson, Geo. V., Company.
Evans, G. Frank.
Farrel Foundry and Machine Co.
Hunt, Rodney, Machine Company.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Latshaw Pressed Steel & Pulley Co.
Philadelphia Drying Machinery Co.
Plymouth Cordage Co.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Presses.
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Gessner, David.
Hart, Charles.
Phila. Drying Machinery Co.
Spence & Rideout.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.
Press Papers.
Merwin Paper Co.
Richardson Brothers (Importers and Dealers).
Pressure Regulators.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.
Pulleys.
——See Power Transmitting Machinery.
Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.
Hunt, Rodney, Machine Company.
Textile Finishing Machinery Co.
Pump Governors.
Crosby Steam Gage & Valve Co.
Dean Bros. Steam Pump Works.
Walworth Mfg. Co.
Purifying & Filtration Plants.
Hungerford & Terry.
Norwood Engineering Co.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.
Quillers.
Foster Machine Co.
Payne, G. W., & Co.
Rag Pickers.
Schofield, Wm., Co.
Smith & Furbush Machine Co.
Ramie Tops and Noils.
Tierney, Frank A.
Raw Hide Gears.
New Process Raw Hide Co.
Philadelphia Gear Works, Inc.
Reed and Harness Manufacturers.
American Supply Co.
Garland Mfg. Co.
Walder, J.
Reducing Valves.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.
Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.
Remnants.
Feingold, H. & D.
Ribbon Cutters.
Cameron Machine Co.
Ribbons.
Cheney Bros.
Ring Travelers.
DeHaven Mfg. Co.
Shaw, Victor, Ring Traveler Co.
Roofing.
Griffin Roofing Co.
Standard Paint Co.
Roofing Material.
Johns-Manville Co., H. W.

Alphabetical Advertising Index, with page numbers, follows this list.

GRIFFIN ROOFING COMPANY
506 W. 26 ST., NEW YORK CITY BADGER AND AVON AVE., NEWARK
ESTIMATES FURNISHED FOR
GRAVEL, SLAG, PLASTIC CEMENT, OR ANY KIND OF COMPOSITION ROOFING
ON NEW OR OLD BUILDINGS FLAT OR STEEP ROOFS.
OUT OF TOWN WORK AT SLIGHT ADVANCE OVER CITY PRICES

RUBEROID ROOFING

Trade Mark Reg. U. S. Pat. Office.

The original elastic, weatherproof roofing. Resists acid, fire and great heat. Contains no paper or tar and will not crack, tear, rot or melt.

Invaluable for Dyehouses and Sawtooth Roofs

Ruberoid Roofing is not affected by climatic changes, but remains uniform throughout the whole year.

THE STANDARD PAINT COMPANY,
General Offices, 100 William St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Kansas City, Atlanta.

Roller Leather.
Bowes, L. M., Co.
Jefferson, Edward & Brother.

Rope.
American Mfg. Co.
Plymouth Cordage Co.

Rope Transmission.
American Mfg. Co.
Cresson, Geo. V., Company.
Hunt, Rodney, Machine Company.
Plymouth Cordage Co.

Roving Cans.
Hill, James, Mfg. Co.

Ruberoid Roofing.
Standard Paint Co.

Scallop Machines.
Merrow Machine Co.

Schools.
Bradford Durfee Textile School.
International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

Secondhand Machinery.
——See Mchry. Dealers, also classified Ads.

Separators (Yarn).
Draper Co., The.

Separators (Oil and Steam).
Harrison Safety Boiler Works.

Sewing Machines and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Manufacturers' Supplies Co.
Textile Finishing Machinery Co.
Union Special Machine Co.
Walter & Co.
Willcox & Gibbs Sewing Machine Co.

Shearing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Sheet Metal Work.
Scaife, W. B., & Sons.
Sterling Blower & Pipe Mfg. Co.

Shell Rolls.
Thurston, A. G., & Son.

Shoddies.
——See Wool Shoddies.

Shook (Box).
Connecticut Box Co.

Shuttles.
——See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Leigh, Evan A.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.

Silk Mill Supplies.
Hall, I. A., & Co.

Silk Noils.
Fawcett, Hughes.

Singe Plates.
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Taunton, New Bedford Copper Co.
Textile Finishing Machinery Co.

Singeing Machines.
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Leigh, Evan A.
Smith, Drum & Co.
Stubbs, Joseph.
Textile Finishing Machinery Co.

Sizing Kettles.
Smith Sons, John E., Co.

Sizing, Starch and Gums.
Arabol Mfg. Co.
Consolidated Rendering Co.
Stein, Hirsch & Co.

Skylights.
Drouve, G., Co.
Irwin, Thos. W., Mfg. Co.

Slag and Gravel.
Griffin Roofing Co.

Slashers.
Leigh, Evan A.
Lowell Machine Shop.
Riley, C. E., Company.

Soaps.
Dobbins Soap Mfg. Co.
Nicetown Mfg. Co.
Zurn, O. F., Co.

Spindles.
Bamford & Smith.
Hodden, Wm. & Son, Ltd.
Buckley's, Benjamin, Sons.
Draper Company.
Easton-Burnham Co.
Hopkins Machine Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Spindle Tubes.
Bamford & Smith.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Spinning Rings.
Draper Company.
Howard & Bullough American Machine Co.
Whitinsville Spinning Ring Co.

Spinning Tubes.
Buckley's, Benjamin, Sons.
Jefferson, Edward & Brother.

Spools.
——See Bobbins, Spools, Shuttles, Etc.

Spoolers.
Draper Company.
Easton & Burnham Machine Co.
Lindsay, Hyde & Co.
Lowell Machine Shop.
Payne, George W., & Co.

Stacks.
Scaife, W. B., & Sons.

Steam Boilers.
Allen, William, Sons Co.
Harrison Safety Boiler Works.
Robb-Mumford Boiler Co.
Scaife, W. B., & Sons.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co.

Steam Boxes.
Allen, William, Sons Co.

Steam Engines.
American Blower Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Hooven, Owens & Rentschler Co.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.

Steam Jacket Kettles.
Badger, E. B., & Sons Co.
Smith Sons, John E., Co.

Steam Pumps.
Dean Bros. Steam Pump Works.
Goulds Manufacturing Co., The.

Steam Specialties.
Butterworth, H. W., Sons Co.
Crosby Steam Gage and Valve Co.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Walworth Manufacturing Co.

Steam Traps.
Albany Steam Trap Co.
American Blower Co.
Sturtevant, B. F., Co.

Steel Frame Construction.
Scaife, W. B., & Sons.

Stop Motion for Knitting Machines.
Boss Knitting Machine Works.
Ruth Machine Co.

Stop Motion for Looms.
——See Warp Stop Motions.

Superheaters, Foster.
Power Specialty Co.

Tanks and Towers.
Chicago Bridge & Iron Works.

Tanks, Tubs and Vats.
Cypress Lumber Co.
Hall, Ames H., Son & Co.
Hopkins Machine Works.
Hunt, Rodney, Machine Company.
Lewis, H. F., & Co., Ltd.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Scaife, W. B., & Sons.
Stearns, A. T., Lumber Co.
Woolford, G., Tank Mfg. Co.

Tapes, Braids and Edgings.
Cathcart, John, & Co.
Chapin, George W.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Maurer, F. W., & Sons Co.
Weimar Bros.

Telephone Holder.
American Electrical Telephone Co.

Telephones.
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Salvator Transfer, Inc.,

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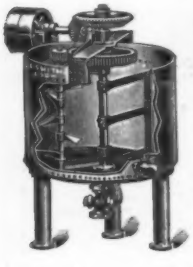

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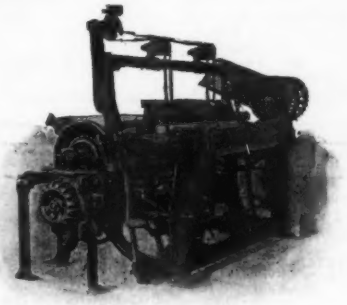

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We have an interesting little booklet No. 22 "**The Motor in the Mill;**" you should have a copy.

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The wonderful speed attained by *UNDERWOOD* operators is not alone due to the freedom of action and ease of manipulation of the machine.

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Valuations and Reports on plants for Sale, Rental, Taxes or Insurance.

Advice and specifications for electric plants. Supervision, examinations, reports and general services at regular intervals.
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A specialty of illumination best adapted for work on colored goods. Arrangement of fire, yard and regular lighting systems.

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is a most *important question* to you. When building a new plant or when having trouble with your old one consult us. *We can save you money and annoyance.*
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DEALER IN
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Send for list and state what is wanted.

Double the life of your Dye Tubs, Tanks, Vats, Understructures, All kinds of wood work by using AVENARIUS CARBOLINEUM
A self-impregnating paint of heavy specific gravity which penetrates deeply into the woodwork, preventing rot, dry rot, or decay. Expels and repels moisture from wood making it waterproof. Prevents checking and warping. Makes wood tough and hard, increasing its resistance against strain. Applied with a brush or by immersion of the wood. No skilled labor required. Treated paving blocks furnished.
WRITE FOR FURTHER INFORMATION.
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Portable and Electric.
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is the most important problem of its construction. By using the saw tooth construction of roof with the "*Anti Pluvius*" system of skylight the maximum amount of light is carried into the building to every part of the floor. The ventilation is another important consideration and every mill should be equipped with the *Lovell Window Operating Device* by means of which a long line of sash can be opened and closed from one station. Let us submit estimates for the lighting and ventilation of your building. We will guarantee satisfaction.

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Rates, 15 cents a line per issue when replies are sent in care of TEXTILE WORLD RECORD to be forwarded. If replies go direct to advertiser the rate is 10 cents per line per issue. Count seven words to a line and include side head and address. Cash must accompany the order for these ads. If such ads. are "displayed" the rate is $2.00 per inch single column each time.

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to move into fine large two story brick building in a hustling little city in Shenandoah Valley, Virginia.

Over 25,000 square feet floor space, very light. Right on N. & W. tracks with switch into plant. Building complete with engines, boilers and shafting. Good water power, excellent shipping facilities, abundance of labor at nominal wages. Best climate and social environment. Local capital will co-operate, and other concessions given. For detailed information address

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A large builder of knitting machinery in Saxony, Germany,

whose machines are adapted for both hand and power, desires a thoroughly experienced and active agent. Address, D V 408 to Rudolph Mosse, Dresden, Saxony, Germany.

FOR SALE.

2 Sets 40 x 40 D. & F. Cards.
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1 Trey Laundry Mangle 14 x 20.
60 Feet 4 in. Shafting.
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A. C. STALEY MFG. CO., South Bend, Ind.

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any size

Dressed and Undressed HARDWOOD LUMBER

AUSTIN HOWARD, West Hartford, Vt.

WANTED.

Knitter with experience on Cooper Circular Spring Needle Machines. Address,

J. E. N., care TEXTILE WORLD RECORD, Boston, Mass.

Wanted an experienced Knitter

on the Wildman Knitting Machine, state experience, salary, etc., steady place. Address, "Wildknit", care Textile World Record, Boston, Mass.

Experienced and Successful Manufacturer

of colored and gray cotton goods and yarns with means and financial ability would accept position of treasurer, general manager, or treasurer and general manager in good going concern. Address, "Britton," care Textile World Record, Boston, Mass.

Wanted a small manufacturing concern making a cotton mill specialty, desiring to sell half interest to energetic partner. Appliance to be considered must be of proved value, at present being manufactured and introduced into leading mills. No money will be put into patents, good will, etc., and only into plant and machinery taken at a conservative figure. Probable manufacturer must be a gentleman and references and eeperience exchanged. Location Mass. or N. H. Address, "X" care Textile World Record, Boston, Mass.

SUPERINTENDENT FOR A NEW FELT MILL WANTED.

Mnst understand all departments of the manufacture of shoe felts. Not a large mill and must be willing to take hold himself if necessary. Located in Canada. Address, "Shoe Felts," care Textile World Record, Boston, Mass.

Crane Machines For Sale.

Twenty and thirty inch, 4 feeds; the twenty inch machines 17 needles to the inch, 30 inch machines 10, 16 and 18 to the inch; electric stop motions; have been used only a short time. Address "Z," care Textile World Record, Boston, Mass.

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Cream Softeners, Turkey Red Oil, (all grades) Soluble Oils and Olive Oil.

235 No. Front Street, PHILADELPHIA.

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That means first mortgage sinking fund gold bonds, being a first lien on 7000 acres of the best bituminous coal in the South. Located in Marion and Franklin Counties, Tennessee. Contiguous to the markets that pay the best prices and insist upon a high-grade domestic and steam coal.

Synopsis of Expert Engineer's Report:

"Page 24,	Total Production	60,000,000 tons
" 36,	Annual Production	400,000 "
" 37,	" Mining Profit . . .	$300,000.00
	" Store Profit	60,000.00
	" Rent "	20,000.00
	Total Annual Profit (One Works)	$380,000.00
	Period of Operation	50 Years
	Total Value of Field . . .	$15,000,000.00

NOTES:—The store and rent profits are based on authentic data. The period of operation and value of field are assumed on a drop of 50% in the markets of the future, combined with a doubling of the production."

The first works, now building, will have a capacity of 2000 tons per day and there is room for four more, which the Company will build as soon as possible.

Only a limited amount of the bonds remain unsold and we are very desirous of interesting with us some of the people in the textile industry.

Particulars as to the bonds, preferred stock, management, list of the stockholders, markets, railroad facilities furnished at the office of the

Cross Creek Coal Company

609 Mutual Life Bldg. BUFFALO, N. Y.

Send for a copy of "Facts About the South". It will interest you.

SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, Boston, or state their requirments directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide aquaintance with mill men, is now a member of the Textile World Record staff, and gives special attention to this department. He would be pleased to hear from any of his friends who may be interested. Address Textile World Record, 144 Congress St., Boston, Mass.

SITUATION WANTED

Designer or Superintendent wants position, twenty years' mill experience on all grades of woolens, worsteds and cotton worsteds, mostly men's wear fabrics. Address, "FABRICS." care of TEXTILE WORLD RECORD, Boston, Mass.

Superintendent of a Hosiery Mill

Position wanted by a man who understands thoroughly the cotton hosiery business. Address, S. C. Rogers, care Inside Inn, Jamestown Exposition, Norfork, Va.

Wanted. Position as overseer or knitting machine fixer of a knitting mill manufacturing fancy sweaters, cardigans, ladies' blouses, vests, etc. Familiar with Seyfert & Donner, Claes & Flentje full automatic knitting machines. Will send samples of own work. Am also capable of taking charge of finishing. Address "Dane," Textile World Record.

Assistant Superintendent, or Boss Weaver in a Woolen Mill. Position wanted by a married man, 28 years of age. Worked on all kinds of woolen goods, including cassimeres, suitings, dress goods, kerseys, thibets, meltons. Understands the Crompton & Knowles looms, has had experience in the carding and spinning room. A graduate of the International Correspondence School. Good reference. 4043, Textile World Record, Boston.

Assistant Superintendent, or Assistant Designer in a large woolen mill, or Assistant Superintendent and Designer in a medium sized woolen mill. Position wanted by a man 38 years of age, American, single. Worked on tourists' coatings, shirtings, dress goods, broadcloths, kerseys, etc. Good references. 4034, Textile World Record, Boston.

Boss Dyer in a Woolen Mill. Position wanted by a man 23 years of age, married, American. Worked on worsteds and woolens, raw stock, skein and piece goods. Familiar with Klauder & Weldon machines for yarn. Will not go South. Good references. 4036 Textile World Record, Boston.

Wanted. Position as bookkeeper or traveling salesman by man of experience, would invest $2000 to $2500 with a good firm with a position after both parties were satisfied, middle age man, married, of good habits, with good reference. 3472, Textile World Record, Boston.

Overseer of London Shrinking Department. Position wanted by a man 33 years of age, single, and has had 13 years experience with the English method of shrinking. Familiar with Crawford Hydraulic Presses, also Curtis & Marble. Good references. 3963, Textile World Record, Boston.

Overseer of Dressing, Spooling and Twisting. Position wanted by married man, 38 years of age, worked on all kinds of woolen goods, worsteds, dress goods. Good reference. 4042, Textile World Record, Boston.

Overseer Woolen Spinning. Position wanted by a man 45 years of age, married, worked on woolen goods made of wool shoddy and cotton mixes; good references; take position at short notice. 4044, Textile World Record, Boston.

Boss Finisher and Dyer

aged 46, married, with wide experience on fancy and plain worsteds, woolens and mixed goods, also all kinds of ladies' dress goods, shirtings, etc., perfectly familiar with all kinds of finishing machinery, having made several improvements in that line, wishes a situation as Finisher, Dyer and Finisher or Assistant Superintendent. Can furnish best of references. Address, "Finisher," care Textile World Record, Boston, Mass.

Overseer of Knitting Room

Wants position in mill where Standard Knitters are used. Experienced on several other makes but prefers the Standard. Fourteen years experience in a mill; seven years fixing. Understands the making of hosiery of any style. Also understands looping and welting machines of almost any make. At present fixing on 105 Standard machines. American; 36 years old; married. Address, "Standard," care Textile World Record, Boston, Mass.

Foreman of Dyeing and Bleaching Wants Situation. Twenty-nine years old, has worked on all wool and cotton wool piece goods, loose wool, worsted yarn and hosiery. Is thoroughly acquainted with aniline and alizarine dyes on all kinds of material. Address "Experienced," Textile World Record, Boston.

Assistant Designer or Overseer of Twisting, Spooling and Beaming. Position wanted by man 29 years of age, married, has worked on ginghams, woolen, cotton and worsted goods, would prefer a position in Central or Western North Carolina, or Southwestern Virginia, a graduate of designing and has good knowledge of machinery, Crompton & Knowles looms, Collins Bros. twisters, spoolers, Whitin spinning frames, Draper beamers, twisters, spoolers. Good reference. 4040, Textile World Record, Boston.

Superintendent Print Works, Bleach or Dye Works. Is open for engagement, has worked on all kinds of cotton goods and finished, printed bleached and dyed all classes of goods from ducks to fine lawns. Good reference. 4041, Textile World Record, Boston.

Superintendent or Agent of a Cotton Mill. Position wanted by a man 47 years of age, married, American. Worked on all kinds of cotton goods and yarns. Familiar with all kinds of machinery. Good references. 4033, Textile World Record, Boston.

Overseer of Woolen Carding, or Carder and Spinner. Position wanted by a man 36 years of age, married, worked on all kinds of stock, wool shoddy, cotton, mixed goods, understand all makes of cards and J. & B., D. & F. mules. Good reference; will not go to Maine, Pennsylvania, West, South or Canada. 4037, Textile World Record, Boston.

Overseer of Woolen Carding. Position wanted by man 46 years of age, widower, worked on all kinds of woolen goods and on all kind of stock, wool, cotton and shoddy mixes. Good reference from four leading mills where employed, could take position at once as mill where last employed have stopped carding. 4039, Textile World Record, Boston.

Overseer of Weaving in a Woolen Mill. Position wanted by a man 42 years of age, married, American. Worked on cotton, worsteds, woolens, dress goods and fancy worsteds. Familiar with Crompton & Knowles looms. Will not go west, south or Canada. Good references. 4035, Textile World Record, Boston.

WOOLEN SUPERINTENDENTS.

Assistant Superintendent in Woolen Mill. Position wanted by a single man who has had experience on kerseys and thibets, and has held position a Assistant Superintendent for three years, but out of work on account of mill being closed; have had a thorough training in the manufacture of goods and in different departments. Good reference. Could take position at short notice and at reasonable wages. 4038, Textile World Record, Boston.

Asst. Supt. or Overseer of Finishing. Position wanted by a man 44 years of age, married. Has worked on all kinds of woolen and worsted goods, high grade broadcloth, overcoatings, kerseys, beavers and dress goods. Is familiar with English, American and German machinery. Good references. 3575, Textile World Record.

Manager, Agent, Supt. or Supt. and Designer. Position wanted by a man 57 years of age, English, married, has worked on all classes of woolen and worsted goods, in fancy and piece dyes, from the finest to the coarsest goods. Familiar with all kinds of machinery, has exceptionally good reference, could take a position at once. 3705, Textile World Record.

Superintendent or assistant superintendent in a woolen mill. Position wanted by a man, 30 years of age, American, married. Familiar with all kinds of woolen and worsted goods, also yarn production from fine to low grades. Also familiar with French system of worsted yarn manufacturing. Good reference. 3795, Textile World Record, Boston, Mass.

Superintendent of Woolen Mill. American, 35 years of age, with experience on cotton worsteds, piece dyes, unions, thibets, all wool goods and satinets. Understands nearly all machinery used in this work. Is dyer and finisher on above goods and would accept such a position. Wants position in the East. 3403, Textile World Record, Boston.

Superintendent or Overseer of Spinning, Twisting, Reeling in a worsted mill or carpet mill. Position wanted by a man 40 years of age, married, English. Has worked on knitting worsteds, Scotch fringerings, carpet worsteds, long wool, serge yarn on tube or bobbin, cap or fly frames. Familiar with the Prince, Smith spinning and twisting machines, Hall & Steele twisting machines. Good reference. 3783, Textile World Record, Boston.

Supt. in Small Mill, or Asst. Supt. and Designer. Position wanted by a man 31 years of age. Graduate of English Textile School, and is experienced on fine fancy worsteds, worsted cheviots, piece dyes for men's wear, having been designer on these goods for past 8 years. Good references. 3545 Textile World Record.

Superintendent and Designer wants position as manager. Experienced designer and practical man for the tie-up of looms for weaving ribbons, silk, upholstery and cotton goods, plain and jacquard cloths. 20 years' experience as manager and understands a mill in all its branches. Knows the coloring for stripes and figured upholstery, cotton, silk and ribbon novelties a special. 3423, Textile World Record, Boston.

Superintendent or Overseer in a carpet or rug mill. Position wanted by a man 31 years of age, English, married. Held the position in England in the ingrain department for three years, the Axminster rug department, four years. Good reference. 3826, Textile World Record, Boston, Mass.

Asst Supt. or Overseer of Weaving. Position wanted by a man 50 years of age, married and American. Has worked on kerseys, beavers, cheviots, overcoatings, meltons, etc., and is familiar with all kinds of woolen machinery. First-class references. 3528, Textile World Record.

Manager or superintendent of a worsted mill. Position wanted by a man 33 years of age, married and English. Is experienced on all grades of wool and hair, and is familiar with all makes of worsted machinery. First-class references. 3596, Textile World Record, Boston, Mass.

Superintendent or Manager of Woolen Mill. Position wanted by a man 47 years of age, married, Scotch. Is experienced on worsteds, fancy cassimeres, homespuns, meltons, thibets, kerseys, overcoatings, cheviots and dress goods. Is familiar with all kinds of woolen machinery. Good references. 3619, Textile World Record, Boston, Mass.

COTTON SUPERINTENDENTS.

Superintendent of Bleachery. Worked on all kinds of lawns, lenos and colored lawns, towels, colored and white ducks, drills, tickings, shirtings and hosiery. Familiar with all kinds of bleaching machinery; first-class references; 55 years of age. 3245, Textile World Record.

Superintendent or boss weaver in a cotton or woolen mill. Worked on sheetings, shirtings, ginghams, plaids, checks, cottonades and figured jeans. Familiar with all kinds of machinery; 45 years of age; first-class references. 1806, Textile World Record.

Superintendent of a Cotton Mill. Would consider a position as overseer of weaving or carding. Position wanted by a man 47 years of age, American, married. Worked on plain and fancy white cotton goods, both coarse and fine. Has held the position as superintendent in a number of mills. First class reference. 3321, Textile World Record, Boston, Mass.

Assistant Superintendent or overseer of weaving in a silk mill. Position wanted by a man 38 years of age, German, married. Has worked on broad silks, ribbons, bindings, webbings, woven labels for shoe factories. Familiar with Crompton & Knowles, Schaum & Uhlinger, Ehrenberg and all kinds of winding and quilling machines. Will not go to Canada, Maine, New Hampshire or Vermont. Good reference. 3819, Textile World Record, Boston, Mass.

Superintendent of a cotton mill. Position wanted by a man, 42 years of age, American, married. Has worked on a general line of colored goods, sheetings, prints and shirtings. Familiar with all kinds of cotton machinery. Has held a position as superintendent in some of the leading mills. Could be employed at short notice. 3726, Textile World Record, Boston, Mass.

Superintendent of a Weaving Plant or overseer of weaving. Position wanted by a man 40 years of age, American, married. Worked on fancy and plain cottons, silk taffetas, sheetings, muslins, fancy colored cloths in white and colored. Also fancy towels. Good reference. 3837, Textile World Record, Boston, Mass.

Superintendent of a Bleachery or overseer of dyeing. Position wanted by a man 44 years of age, American. Worked on cotton piece dyes, plain and prints, spool cotton, yarns, warps, raw stock and hosiery. Familiar with all kinds of machinery used in an up-to-date bleachery and dye works. Good reference. 1680, Textile World Record, Boston, Mass.

Manager, Superintendent, Buyer or cost accountant in a cotton mill. Position wanted by a man 30 years of age, American, single. Has had a practical training in the manufacturing of cotton goods. Good reference. 3834, Textile World Record, Boston, Mass.

Superintendent and Designer. Position wanted by a man 30 years of age, English. Has worked on all kinds of fancy cotton goods, and is familiar with all kinds of cotton looms. Good references. 3682, Textile World Record, Boston, Mass.

Superintendent or assistant superintendent of a cotton mill. Position wanted by a man 29 years of age; married. Is experienced on sheetings, shirtings, ginghams, flannelettes, domets and fancy hosiery yarns. Is expert on colored work. Is familiar with all kinds of American and English carding and spinning machinery. First-class references. 1718, Textile World Record, Boston, Mass.

Cotton Superintendent. Worked on dress goods, shirtings, skirtings, ginghams, cotton flannels and blankets. Familiar with all kinds of cotton machinery. Age 37, married; first-class references. 1432, Textile World Record.

Superintendent of cotton mill, spinning or weaving, assistant superintendent or designer or overseer of weaving, plain or fancy goods. Age 28; English; married; first-class references. 3243, Textile World Record.

Superintendent, assistant or boss weaver and designer. Position wanted by a man, 35 years of age, English, married. Familiar with lappett and dobby work, lenos, silk handkerchiefs and all kinds of cotton goods made on dobby and box motion looms. Good reference. 3793, Textile World Record, Boston, Mass.

WOOLEN SPINNERS.

Second Hand in a Woolen Spinning Room. Position wanted by a young man 30 years of age, single, has had a number of years' experience as spinner and has been allowed to fix his own machines. Would like to get a position as second hand where he could learn to fix mules under a good man. He is familiar with D. & F. or J. & B. machines, and wants a position in the West or Middle West. 3707, Textile World Record.

Overseer of Woolen Spinning. Position wanted by a man 40 years of age, widower, worked on all kinds of yarns, wool, cotton and shoddy mixed. Familiar with the J. & B. and D. & F. machines. First class recommendations. 3720, Textile World Record.

Overseer of Woolen Spinning. Position wanted by a man, 55 years of age, American, married. Familiar with J. & B. mules. Good reference. 3797, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning. Position wanted by a man 48 years of age, married, English. Worked on all kind of yarns, wool, cotton and shoddy mix, on D. & F., J. & B., Platt, Curtis & Kent mules. Good references from first-class mills. Would prefer a position in middle west. 3499, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 30 years of age; English. Has worked all kinds of stock, cotton, wool and shoddy, from 5/8 run to 13 and is familiar with Davis & Furber mules and operators. Good references. 3595, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 37 years of age; married and American. Has worked on all kinds of wool, cotton and shoddy mixes. Is familiar with Davis & Furber and Johnson & Bassett spinning machinery and operators. Good references. 3603, Textile World Record, Boston, Mass.

Carder and Spinner. Been overseer 12 years, making every variety of cassimere, flannels, overcoatings, cloakings, dress goods, etc. Married; American. 3132, Textile World Record.

Overseer of Spinning, twisting, spooling and reeling. Position wanted by a man 28 years of age, married and American. Has worked on army and navy goods, fine and heavy woolen and merino yarns, fine worsteds, and low stock shoddy and cotton mixes. Is familiar with Davis & Furber, James Smith, Whiteley, English Bridesburgh, and Platt mules. Would prefer a position near Philadelphia. Good references. 3517, Textile World Record, Boston, Mass.

Overseer of Spinning, Winding and Reeling in a carpet mill. Position wanted by a man 34 years of age, American. Has worked on all kinds of goods and stock, wool, cotton and shoddy and worsteds. Is familiar with Davis & Furber machinery. Good references. 3678, Textile World Record, Boston, Mass.

Overseer of Spinning, Twisting and Winding. Position wanted by a man 39 years of age, married, American. Has worked on yarns from 7/8 run to 10 run, wool, cotton and shoddy mixes. Is familiar with Davis & Furber and Johnson & Bassett spinning machinery. Good references. 3567, Textile World Record, Boston, Mass.

Boss Spinner in a woolen mill. 32 years of age, American; familiar with Davis & Furber, Johnson & Bassett and English mules and twisters. First-class references. 3275, Textile World Record.

Overseer of Spinning. Position wanted by a man 36 years of age, married, English. Has worked on all kinds of wool, cotton and shoddy mixes, and is familiar with English mules, Johnson & Bassett mules and jacks. Good references. 3622, Textile World Record, Boston, Mass.

Overseer of Wool Spinning. 39 years of age, with 15 years' experience as overseer on flannels, cassimeres, cheviots, kerseys and cotton mixes. Also on all machinery used in his work. Wants position in the East. 3434, Textile World Record.

Overseer of Spinning. Position wanted by a man 48 years of age, English. Has worked on all classes of woolen goods, and is familiar with Johnson & Bassett, Davis & Furber and Platt spinning machinery. Good references. 3522, Textile World Record, Boston, Mass.

WOOLEN CARDERS.

Overseer of Carding. Position wanted by a man 34 years of age, married. Has worked on all wool, wool cotton and shoddy mixes, cassimeres, kerseys, cheviots, cloakings, etc. Is familiar with all makes of American cards. Good references. 3562, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. Position wanted by a man, 39 years of age, married, American. Has worked on wool, shoddy and cotton mixed goods, dress goods, kerseys, overcoatings, cassimeres, etc. Familiar with D. & F. carding machinery. Good reference. 1766, Textile World Record, Boston.

Overseer of Woolen Carding. Position wanted by a man, 33 years of age, married, American. Worked on all kinds of cotton, shoddy and wool mixed goods. Familiar with all kinds of woolen carding machinery. Will not go west, south or Canada. Could take a position at short notice. Good reference. 3774, Textile World Record, Boston.

Overseer of Carding. American, 40 years of age, with 8 years' experience as overseer, accustomed to all grades of woolen and cotton and shoddy mixes, and to all kinds of woolen carding machinery, wants position in the North. 3358, Textile World Record

Overseer of Woolen Carding. Position wanted by a man, 35 years of age, married, American. Worked on cotton, wool and shoddy mixes and is familiar with very low stock, all kinds of woolen cards, Barker condensers. Good reference. 3800, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 36 years of age, married, German. Has worked on all kinds of all wool, cotton and shoddy mix goods. Is familiar with Furbush, Smith and Bridesburgh carding machinery. Good references. 3606, Textile World Record, Boston, Mass.

Boss Carder or Superintendent of a shoddy mill. Familiar with all kinds of stock, from highest to the lowest grades. All makes of woolen carding machinery. 30 years of age; married; American. 3307, Textile World Record, Boston, Mass.

Overseer of Carding and spinning. Position wanted by a man 36 years of age, married and American. Has worked on cassimeres, flannels, overcoatings, knickerbockers, blankets and carpet yarns. Is familiar with American and English cards and Davis & Furber and English mules. Good references. 3539, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. Position wanted by a man 42 years of age, American, married. Has worked on dress goods, cloakings, cheviots, cassimeres, blankets, cotton worsteds, robes, etc. Low stock a specialty. Familiar with all kinds of machinery. Will not go West, South or Canada. First class reference. 3342, Textile World Record. Boston.

Overseer of Carding in Small Mill, or Second Hand in Large Mill. Position wanted by a young man with good references, worked in woolen and knitting mills on D. & F., Lombard, Cleveland cards on all kinds of stock. 3693, Textile World Record.

Overseer of Carding. Position wanted by a man 42 years of age, American. Has worked on all kinds of wool, cotton and shoddy mix goods. Is familiar with Cleveland, Lombard and Davis & Furber carding machinery. Good references. 3653, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 54 years of age, English, married, has worked on all kinds of stock from the highest to the lowest, also knitting yarns. First class references from leading mills where employed. Could take position at once. 3695, Textile World Record.

Overseer of Carding and spinning. Position wanted by a man 40 years of age, American. Has worked on all kinds of stock, cotton, wool and shoddy, and all numbers of yarn from 7/8 to 8 run. Is familiar with Davis & Furber, Johnson & Bassett, Lombard, and Cleveland carding and spinning machinery Good references. 3577, Textile World Record, Boston, Mass.

Overseer of Carding and spinning. Position wanted by a man 40 years of age, married. Is experienced on all kinds of stock and all numbers of yarn. Is familiar with Davis & Furber, Johnson & Bassett, Furbush, and Bridesburgh carding and spinning machinery. Good references. 3580, Textile World Record, Boston, Mass.

DESIGNERS.

Designer or Assistant Superintendent in a woolen mill. Position wanted by a man, 38 years of age, married, American. Worked on all kinds of worsteds, woolens and dress goods. Could accept a position at short notice. Good references. 3865, Textile World Record, Boston.

Designer or Assistant Superintendent of a worsted or woolen mill. Position wanted by a man, 25 years of age, single. Has worked on fancy and cotton worsteds and woolens of all kinds. Has had seven years' practical experience in different departments of worsted and woolen mills. Good references. Could accept a position at once. 3851, Textile World Record, Boston.

Superintendent and Designer or assistant superintendent and designer in a woolen mill. Position wanted by a man 29 years of age, American, married. Worked on all grades of woolen goods, both wool and worsted, also blankets. Familiar with all kinds of machinery. Will go any place for a good position. 3838, Textile World Record, Boston, Mass.

Designer or Assistant Superintendent or assistant in a woolen mill. Position wanted by a man 31 years of age, single, Scotch. Has had a number of years' experience in leading mills. Is familiar with fancy worsted goods, men's wear, dress goods. Is also familiar with overcoatings, cloakings, men's wear and dress goods in low stock. Good reference. 3829, Textile World Record, Boston, Mass.

Designer or Assistant Superintendent. 40 years of age, married, with experience in best mills in New England. Worked on all kinds of dress goods, from the finest to the heaviest. Understands web drawing and twisting, hand dressing and short chain beaming. 3363, Textile World Record.

DYERS.

Overseer of Dyeing. Men's wear and dress goods, loose and wool, piece dyes and yarns. Good experience. 3161, Textile World Record.

and rugs, cotton and woolen warps; 19 years' experience in this country; first-class references; 47 years of age; English. 3325, Textile World Record, Boston, Mass.

Boss Dyer. Worked on cotton and wool and mixed stock, yarns and piece goods, hosiery, slubbing and raw stock; also scouring of wool; first-class recommendations; 28 years of age; single; English. 3327, Textile World Record, Boston, Mass.

Boss Dyer and Finisher. Familiar with silk, cotton, wool, underwear; also shirtings, scouring, fulling and bleaching. First-class recommendations. 928, Textile World Record, Boston, Mass.

Chemist or Overseer of Dyeing. Position wanted by a man 28 years of age, single. Familiar with all laboratory dyeing. Worked on all classes of goods, such as come up in mill work. Graduated from the Institute of Technology, Boston, Mass., and has had several years' experience as chemist. Good references. 3960 Textile World Record.

Boss Dyer. Position wanted by a man 29 years of age, married. Has worked on cotton, wool and shoddy, raw stock, piece dye, silk noiles, cotton and worsted yarns. Can show bright shade on shoddy fast fulling, acid, aniline and sulphur colors. Good references. 3914, Textile World Record, Boston.

Overseer of Dyeing in a woolen mill, or dyeing and finishing in a felt mill. Position wanted by a man 31 years of age, married. Has worked on all kinds of cotton, wool, shoddy mixes, raw stock, yarns cotton and wool, piano felts, chest protectors and hot felts. Good references. Could take position at once. Will go anywhere. 3911, Textile World Record, Boston.

Overseer of Dyeing. Or would accept a position as second hand in a mill on loose cotton and silk in order to get experience. Now employed as overseer on piece dyes, cost dyes and is familiar also with indigo dyeing. Good reference. 3936, Textile World Record.

WOOLEN WEAVERS.

Overseer of Weaving. Position wanted by a man 40 years of age, married, English. Has worked on all kinds of woolen and worsted goods. Is familiar with Knowles and Crompton looms. Good references. 3647, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving. 18 years' experience as overseer. Worked on cassimeres, cloakings, chinchillas, cheviots, beavers, meltons, shawls, also worsteds and on Crompton and Knowles looms, wants a position in the East. Good references. 3422, Textile World Record, Boston.

Overseer of Weaving, or charge of pattern room. Position wanted by a man 28 years of age, English, single. Worked on all kinds of woolen, worsted and cotton mixed goods. Familiar with Crompton & Knowles. Good references. Will go anywhere for a good position. 3919, Textile World Record, Boston.

Boss Weaver, or assistant superintendent. Position wanted by a man 30 years of age, married. Has worked on dress goods, fancy cassimeres, cotton warp, blankets, shawls and cloakings. Familiar with Crompton and Knowles looms. Will not go West, South or Canada. First class references. 3928, Textile World Record, Boston.

Overseer of Woolen Weaving. Position wanted by a man, 43 years of age, married, Scotch. Has worked on all kinds of woolen goods, including kerseys, meltons, overcoatings, worsteds, cotton warp bed blankets, ladies' dress goods and army goods. Familiar with C. & K., D. & F. and Gilbert looms. Will not go West or South. Good reference. 3809, Textile World Record, Boston, Mass.

Overseer of Weaving in a woolen mill. Position wanted by a man 47 years of age, married, American. Worked on all classes of woolens, worsteds and dress goods. Familiar with Crompton & Knowles looms. Good references. Will not go to Pennsylvania, West, South or Canada. Could take position at once. 3970 Textile World Record.

Overseer of Weaving in a woolen mill. Position wanted by a man 37 years of age, married. Familiar with all classes of woolens, fancy worsteds, cotton worsteds, unions. Familiar with Crompton & Knowles, Crompton & Thayer, Draper automatic looms. Good references. Will not go to Canada. 3965 Textile World Record.

Overseer of Woolen Weaving or assistant designer. Position wanted by a man 33 years of age, married, German-American. Worked on woolen and worsted. Has had 12 years' experience as loom fixer; also textile school training in designing. Worked on high and low grade woolen and worsteds. Prefers a position in the New England States. Good references. 3962 Textile World Record.

Overseer of Weaving in a woolen mill. Position wanted by a man 39 years of age, married, American. Familiar with dress goods, men's wear, cotton worsteds, kerseys, cloakings, etc. Familiar with Knowles & Crompton and Andover looms. Good references. Will not go to Pennsylvania, New York, New Jersey, West, South or Canada. 3959 Textile World Record.

Overseer of Woolen Weaving. Position wanted by a man 38 years of age, married. Worked on woolen, worsted, dress goods and men's wear. Familiar with Knowles, Crompton, Whitin, Mason, Lowell, Lewiston and Draper looms. Will not go to Pennsylvania, West or to Canada. Good references. 3957 Textile World Record.

Overseer of Weaving. Position wanted by a man 32 years of age and married. Has worked on woolen dress goods, suitings, cotton worsteds, worsted dress goods, kerseys, beavers and blankets. Is familiar with Crompton, Knowles, Furbush, Davis & Furber looms and dobby looms. Has first-class recommendations. 3544, Textile World Record.

Overseer of Weaving. Position wanted by a man 28 years of age, single and Scotch. Has worked on wool and worsted, and union goods, blankets, shirtings, rugs, etc. Is familiar with Crompton & Knowles, also English looms and dobbies. Has good references. 3507, Textile World Record.

Overseer of Woolen Weaving. American. 40 years of age, married, with experience on worsteds, cassimeres, kerseys, dress goods, satinets, etc., wants a position in the East. Has worked on all machinery used in this work. 3412, Textile World Record.

FINISHERS

Overseer of Finishing in a woolen mill. Position wanted by a man 26 years of age, single. Worked on all kinds of goods. Will not go West, South or to Canada. Good references. 3945, Textile World Record.

Overseer Woolen Finishing. Position wanted by a man 36 years of age, married, American. Worked on kerseys, beavers, meltons, thibets and cloaking. Has worked in a number of the leading mills. Familiar with all kinds of machinery. Will not go West or South. Good references. 3939, Textile World Record.

Overseer of Woolen Finishing. Position wanted by a man 35 years of age, married, American. Has worked on all kinds of woolen goods, unions, etc. Could take position at one week's notice. Good references. 3915, Textile World Record, Boston.

Woolen and Worsted Finisher. 15 years' experience as overseer; age 39; married; understands all classes of goods, face goods, undressed worsteds, serges, men's wear, cloakings, dress goods, fancy and plain; can finish from loom to case. 3367, Textile World Record, Boston.

Overseer of Finishing. American, 27 years of age, with 7 years' experience. Worked on cassimeres, dress goods, all face finished goods, also fancy and cotton worsteds, piece dyes, satinets, etc. Understands nearly all kinds of machinery, old and modern. 3338, Textile World Record, Boston.

Overseer of Woolen Finishing. Position wanted by a man 40 years of age, single, American. Worked on all kinds of steam faced finished goods, broad cloths, kerseys, meltons, also cassimeres, worsteds and cotton worsteds. Good reference. 3813, Textile World Record, Boston, Mass.

Overseer of Finishing in Woolen Mill. Position wanted by a man 41 years of age, married, American, finished cassimeres, fancy and cotton worsteds, beavers, meltons, dress goods, first class reference. Can take position at once. 3706, Textile World Record.

Overseer of Finishing. Position wanted by a man 32 years of age, married, American. Has worked on all kinds of cotton worsteds, fancy and piece dyed worsteds and woolens. Is familiar with all kinds of finishing machinery. Good references. 3642, Textile World Record, Boston, Mass.

Overseer of Finishing.. Position wanted by a man 42 years of age, American and married. Has worked on all classes of fancy worsteds and is familiar with all kinds of finishing machinery. Good references. 3497, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 40 years of age, married and American. Has worked on all kinds of wool and worsted and cotton mix goods and cotton worsteds. Is familiar with all kinds of machinery used in wet and dry finishing. Good references. 3536, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by an American, 40 years of age and married. Worked on all kinds of woolen and worsted goods and satinets. Familiar with all kinds of finishing machinery. 3475, Textile World Record, Boston.

Overseer of Finishing.. Position wanted by a man 30 years of age, married, American. Has worked on worsted serge cassimeres, flannels, overcoatings, cloakings, dress goods, meltons, kerseys, union, etc. Is familiar with all kinds of finishing machinery. Good references. 3668, Textile World Record, Boston, Mass.

Overseer of Woolen Finishing. Position wanted by a man, 51 years of age, American, married. Has worked on all kinds of woolen goods and has had a wide experience on face finished goods. Is now employed in a large mill, but desires to make a change. Good references. 3861, Textile World Record, Boston, Mass.

Overseer of Finishing in a woolen mill. Position wanted by a man 28 years of age, American. Worked on all wool, wool and shoddy, cotton mixes, dress goods, kerseys, coverts, men's wear, etc. Familiar with all American makes of machinery. Will not go to New Jersey, Pennsylvania, West, South, or Canada. Good references. 3984 Textile World Record.

Overseer of Finishing. Worked on cotton unions, dress goods, cassimeres, beavers, kerseys, covert and army goods. First-class recommendations: 55 years of age. 1661, Textile World Record, Boston, Mass.

KNITTERS.

Overseer of Knitting or assistant superintendent. Position wanted by a man, 20 years of age, single. German. Has worked on full fashioned seamless hosiery, full fashioned cut underwear. Understands cotton, Paget, knitting machines, German terrot loopers and Lamb machine. Good reference. 3775, Textile World Record, Boston.

Superintendent of a Hosiery Mill. Position wanted by a man 38 years of age, married, American. Worked on all classes of cotton seamless, ribbed and plain hosiery. Familiar with most all makes of circular seamless knitting machines, ribbers, loopers and sewing machines. Would prefer a good position in the South. Good references. 3905, Textile World Record, Boston.

Superintendent or Boss Knitter in a seamless hosiery mill. Position wanted by a man with 12 years' experience on Standard B. & F. machines, also ribbers and loopers. Understands finishing goods. Good manager of help. Has been boss knitter in several large mills. Can furnish best of references as to character and ability. Age 31 years, married. 1450, Textile World Record.

Overseer of Knitting in hosiery mill. Worked on wool, cotton and worsted plated hosiery. Familiar with the old National, Electric, Mayo, Campbell, Standard, Branson & Hepworth loopers; McMichael & Wildman ribbers. Good references. 3859, Textile World Record, Boston.

Overseer Boarding and finishing hosiery. All kinds of men's, women's and children's hosiery, except silk; age 41;; American; married. Can furnish references. 3035, Textile World Record.

Overseer of Knitting. Position wanted by a man 30 years of age, single. Worked on ladies' and gents' ribbed goods, shaped and plain. Familiar with Tiffany & Cooper cuff machines, Campbell & Clute machines, Scott & Williams, Smith & Fisher latch needle knitting machines. Will accept a position in New York state only. Good references. 3964 Textile World Record.

Second Hand in Knitting Mill. Position wanted by a man 21 years of age, American. Worked on all kinds of goods on latch needle machines. Familiar with the following makes of knitting machines: Nye & Tredick, McMichael & Wildman, Scott & Williams, H. Brinton & Co., Stafford & Holt. Could take a position at two weeks' notice. Good references. 3975 Textile World Record.

Overseer of Seaming. Position wanted by a man 27 years of age, married. Has worked on ladies' cotton hose and all grades of cotton underwear. Is familiar with Willcox & Gibbs, Hepworth, Campbell & Clute stitching, welting, looping, etc., machines. Good references. 3683, Textile World Record, Boston, Mass.

Overseer of Knitting. Position wanted by a man 27 years of age, American, married. Worked on men's, ladies' and children's hosiery, 108 to 200 needle work. Familiar with the new Mayo, Excelsior machines, Huse & Pepper rib heads, tube seamers. Will not go South. Good reference. 3825, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. American, 28 years of age, with experience on flat wool and cotton, all wool sweaters, rib goods of wool, worsted cotton and cotton plaited. Understands nearly all kinds of machinery used in making these goods 3348, Textile World Record.

Superintendent, or Overseer of Knitting in a Hosiery Mill. Position wanted by a man 33 years of age, single, has worked on ladies', men's and misses' wool, worsted and cotton seamless hosiery on Wildman, Scott & Williams, Ruth and Brinton ribbers, Hepworth and Beatley loopers, Acme and Geor. D. Mayo automatic foot machine. Good recommendations. 3698, Textile World Record.

Overseer of Knitting. Position wanted by a man, 27 years of age, single, American. Worked on fleeces, fancies, balbriggan and open or mesh work, gauges from 12 to 32. Familiar with the Tompkins knitting machines, Universal and Foster camless cone winders, Huse's bobbin winders. Will not work for less than $3.50 per day. First class recommendations. 3746, Textile World Record, Boston, Mass.

Superintendent of Knitting or satinet mill. Position wanted by a man 45 years of age, married. Has worked on knit and staple goods of all kinds, and is familiar with garnetts, cards and jacks of any make. Good references. 3527, Textile World Record, Boston, Mass.

COTTON WEAVERS.

Overseer of Cotton Weaving. Worked on lenos, checks, plaids, fancy stripes, drop box and plain looms. First-class references. Will not go West or to Canada. Age 36, English. First-class references. 1855, Textile World Record.

Overseer of Weaving. Englishman; 33 years of age; married; worked on fine lawns, sheetings, sateens and fancies, coarse drills, twills, bicycle cloth, automobile cloth for tires. Familiar with Whitin, Crompton, Knowles, Mason, Kilburn & Lincoln and Lowell machines. 3073, Textile World Record.

Loom Fixer or second hand in weave room. Worked on all kinds of mixed goods, cotton and woolen dress goods, fine lenos, Jacquard and drop box looms. Age 33; French; good references. 3265, Textile World Record.

Overseer of Weaving or loom fixing. Worked on cotton, woolen, silk. Used to Crompton & Knowles looms, both box and plan, Lewiston looms, Mason, Colvin, Whiting, Patterson, etc. Age 43; Scotch; married. 3216, Textile World Record.

Overseer of Weaving or designer. Lawns, sheetings, twills, sateens, quilts, bedford cords, lappets. A young man; unmarried. Good experience and first-class recommendation. 3068, Textile World Record.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Overseer of Cotton Weaving. Position wanted by a man, 27 years of age, American, married, with experience on prints, cambrics, sateens, drills, corded goods, etc. Worked on Draper, Whitin, Lowell, Mason and Colvin looms. Prefers a position in the East. 3430, Textile World Record, Boston, Mass.

Overseer of Weaving in Cotton Mill, or second hand with a chance for promotion. Position wanted by a man 39 years of age, married, American. Has worked on drilling, duck cloth, sheeting, crash bags, sateens, fancy ginghams and staple goods. Familiar with Crompton, Whitin, Draper, Thomas Butler, Lowell looms. Will not go West, South, Canada or to New York. Good references. 3992 Textile World Record.

COTTON CARDERS.

Overseer of Cotton Carding in a large mill or carder and spinner in a small mill. Position wanted by a man, 35 years of age, American, married. Worked on white and colored work, both fine and coarse numbers. Familiar with all kinds of carding machinery. Good reference. 3784, Textile World Record, Boston, Mass.

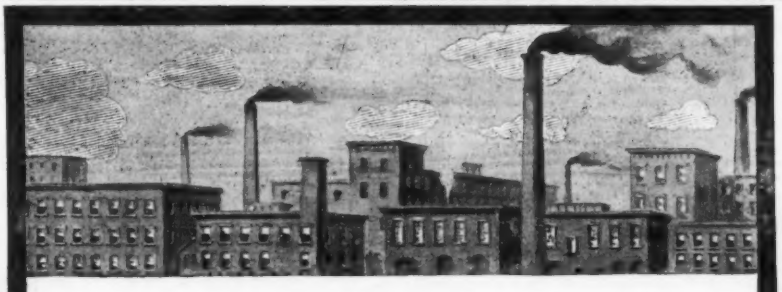
Overseer of Carding in cotton mill. Position wanted by a man 39 years of age, single. Worked on all kinds of cotton goods, Sea Island, combed and carded, from 24s up to 150s. Familiar with American and English carding machinery. Good references. 3941, Textile World Record.

Overseer of Carding in cotton mill. Position wanted by a man 28 years of age, married. Familiar with white and colored numbers up to 16 H. K. Familiar with the following makes of machines: Platt, Mason, Whitin, Lowell, Providence, Kitson and Atherton. Good references. Will not go to Pa., N. J., Western or Southern States, or to Canada. 3951, Textile World Record.

Overseer Ring and Mule Spinning. Position wanted by a man, 45 years of age, married. English. Worked on all kinds of cotton, both fine, coarse from 1s to 200s. All kinds of cotton spinning machinery. Good references. 3850, Textile World Record, Boston.

Overseer of Carding or Spinning in a cotton mill. Position wanted by a man 39 years of age, married, American. Worked on white and colored goods. Familiar with Whitin and Lowell machines. Will not go to Canada, New York, New Jersey or New England States. Good references. 3997 Textile World Record.

Overseer of Carding, or Second Hand in a large mill. Position wanted by a man 36 years of age, married, English, worked on all kinds of yarns—both plain and novelty, shirtings, sheetings and print. Familiar with Saco and Pettee cards and speeders, Lowell, Woonsocket frames, American and English carding machinery. 3696, Textile World Record.



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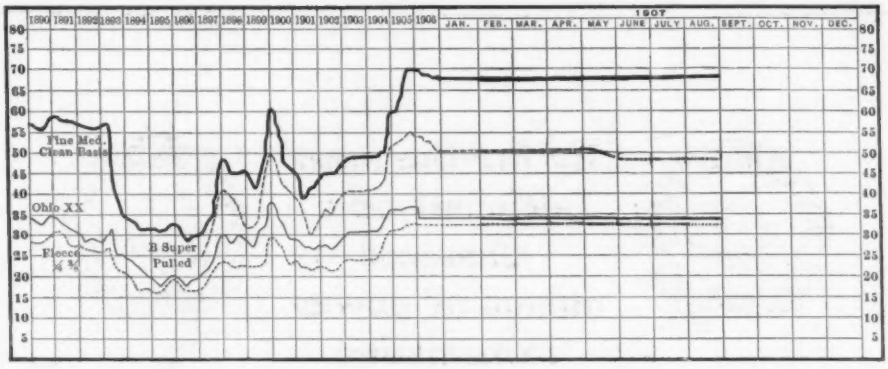


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

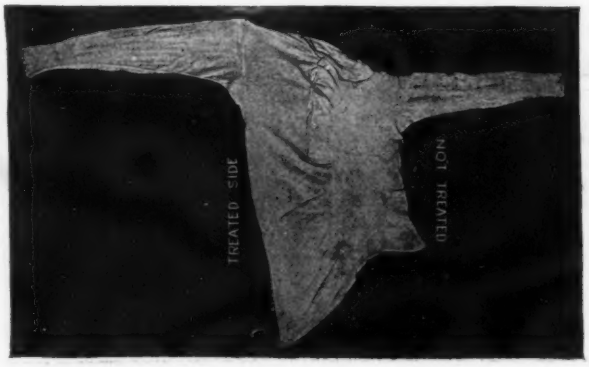
In common with all other markets, business has been restricted in the wool trade by the disturbance in the money market. This influence has been especially strong in wool because of the high cost of the material. Prices, however, have been steady. The new clip is in the possession of strong firms, who have the ability to hold it until manufacturers need the material. There is a general belief in the trade that stocks at the mills are light, and that manufacturers will be forced soon to buy freely. Woolen mills have had a poor season and there are few that are not short of orders and running slack. Many have been shut down temporarily on one pretext or another. This will tend to depress clothing wools still further. While the statistical position is strong, a survey of the situation discloses nothing to warrant the belief that any advance in prices is likely to develop. Worsted wool will have the call, but there is likely to be a buyer's market for some time to come.

Connecticut, Stafford Springs. A new addition is being built to the Warren Woolen Company. It is 12 by 40 feet and two stories high. When completed it is understood that carding machinery will be installed.

*Maine, Sanford. The addition being built to the Goodall Worsted Company's plant is connected to and at right angles with the original mill. The bottom story will be 60 by 100 feet and the two upper stories, 60 by 134 feet. Spinning frames are to be installed.

Pennsylvania, Philadelphia. It is stated that Arthur Rhodes, manufacturer of art squares at Oxford and Josephine streets, Frankford, is about to largely increase the capacity of his plant on account of increased business.

TRADE IS DEMANDING NON-SHRINKABLE WOOL



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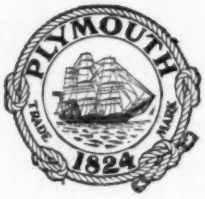

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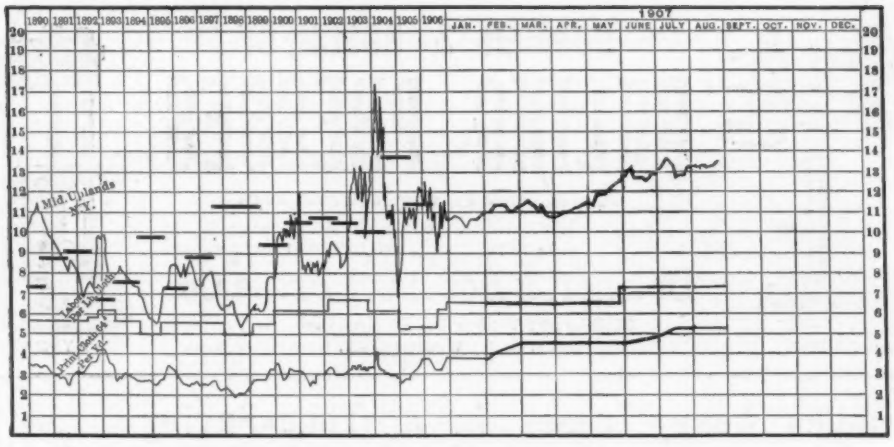

1907
1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mid. Uplands N.Y.
Mid. Uplands Liverpool
Middling Gulf at New York

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The Cotton Market.

The financial situation both at home and abroad has exerted a strong influence on the cotton market, particularly on the speculative contingent. Not only have the banks been cautious about lending, but traders have been even more unwilling to borrow at a time when so many clouds are in the financial sky. This situation has made manipulation practically impossible. The continued strength of the cotton market is, consequently, the result of what may be termed legitimate conditions, that is the balance between supply and demand.

The movement of cotton into sight during the month, shows a marked falling off compared with last year. The into sight movement from Sept. 1 to Aug. 24, is estimated by the Chronicle for a series of years as follows:

1906-07, Aug. 23	.....	13,451,122 bales
1905-06, Aug. 24	.....	11,152,680 bales
1904-05, Aug. 25	.....	13,562,268 bales
1903-04, Aug. 26	.....	10,153,964 bales
1902-03, Aug. 28	.....	10,728,602 bales
1901-02, Aug. 29	.....	10,565,557 bales

The world's visible supply on Aug. 23d is estimated by the same authority at 2,423,921 bales; as compared with 1,874,932 bales on corresponding date of 1906; 2,571,826 bales in 1905; and 1,153,569 bales in 1904.

*Alabama, Florence. The Cherry Cotton Mills advise that they are replacing old roving, spinning and twisting frames by improved machines, and putting in a steam turbine plant to generate electricity. No new additions are contemplated.

*Connecticut, Bridgeport. Ten new looms will be installed in the addition to the Bridgeport Elastic Fabric Company, Inc., plant. It is expected that they will be running on narrow elastic fabrics by September 15th.

*Georgia, Athens. Construction work has been started on the new mill being erected for the Southern Mfg. Company.

*Massachusetts, New Bedford. Construction work on the new weave shed to be built for the Potomska Mills will be begun this fall. The new building will be located at the east end of the present plant.

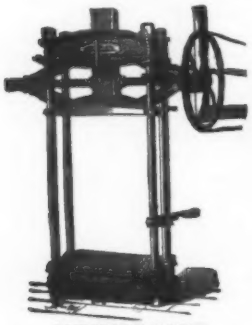
*North Carolina, Cherryville. Construction work on No. 2 Mill of the Gaston Mfg. Company is progressing rapidly, and contract for machinery has been let. The mill will be 243 by 77 feet and the equipment will consist of 5,000 spindles.

*Rhode Island, Forestdale. The new mill being erected for the Forestdale Mfg. Co. has been completed.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.

Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.



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BOOMER & BOSCHERT

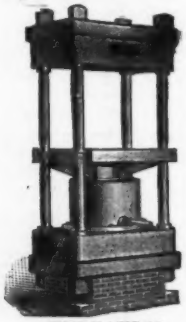
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



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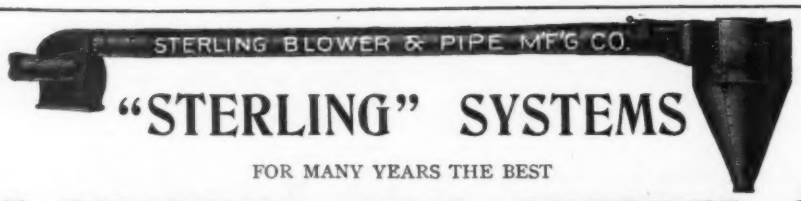
Handles heavy cases in a Time-Saving Way—The Economy Steel Tiering Machine

Goods are put in place with ease and economy. The largest amount of stock can be stored in the smallest possible space and yet be instantly accessible. In use in representative mills. Investigate its merits and 'twill be in use in yours. Write for prices.

Economy Engineering Co.

58-64 N. Jefferson St.
Chicago, Ill.



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FOR MANY YEARS THE BEST

DUST COLLECTING, WOOL CONVEYING, ETC.

STERLING BLOWER & PIPE MFG. CO.

Write for "1907" Catalog.

HARTFORD, CONN., 1027 Huyshope Ave. New York Office, 109 Liberty St.

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THE BRANDEN RUBBER PUMP VALVE
Will Outlast Three Ordinary Valves.

Made for hot or cold water or any fluid where rubber valves are used. By its construction will outlast several ordinary valves. A trial will demonstrate the truth of our statements.

JOHNSTONE BLOW-OFF VALVE. A most durable and useful valve.

Pressure and Vacuum Gages. Pop Safety Valves.
Steam Engine Indicators. Whistles, Lubricators, Etc., Etc.

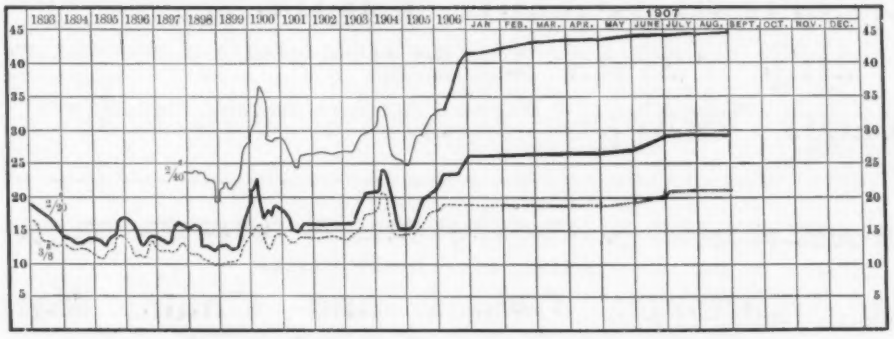
CROSBY STEAM APPLIANCES ARE UNEXCELLED.

CROSBY STEAM GAGE AND VALVE CO.,

Stores: Boston, New York, Chicago, London.

Office and Works:
BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

The cotton yarn market has for a long time been free from the influence of current fluctuations in the raw cotton market. Spinners have had their production booked far ahead and buyers have been forced to meet the spinners' views or go without yarn, regardless of whether the price of raw cotton rose or fell. Until recently the market for woven and knit goods has furnished support to the spinners. During the past month a change in the situation has been evident. Buyers of yarn have not the usual confidence in the future. They are no longer eager to sign contracts for the delivery of yarn far into the future and beyond the requirements of their orders for goods. As a result business in the yarn market has fallen off and prices have been lower. The change is largely due to the slackening in business throughout the country. In the yarn trade, as in other branches, buyers are showing a pronounced tendency to buy only for immediate requirement. They are more willing to let the other fellow carry the stock and take the chances of a rise or fall in prices. We quote as follows:

Eastern Cops.

6s	22½
8s	23
10s	23½
14s	24½
16s	25
18s	26
20s	26½
22s	27
24s	28
26s	29
30s	31
34s	34
36s	36
40s	40

On cones, ¼c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	26
14s	26½
18s	28
20s	29
24s	31
26s	32
30s	36
36s	41
40s	46
45s	51
50s	56
55s	61
60s	66

Eastern Two-Ply Warps, Carded Peeler.

2/30s	37
2/36s	42
2/40s	46
2/45s	51
2/50s	57
2/60s	67

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	50
36s	51
40s	53
45s	56
50s	60
55s	63
60s	70
70s	77

*North Carolina, King's Mountain. The Cora Cotton Mills report that construction work will be begun on their new mill in September. 10,000 spindles will be installed. 40s and 60s yarn will be manufactured.

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS.

4s to 60s.

FRANK A. TIERNEY,

TOPS, NOILS, ROVINGS, YARNS

Sole Selling Agent

Atlantic Fibre Co.

LUZONNE SILK YARNS.

LUZONNE LINEN YARNS.

260 West Broadway, - New York, N. Y.

Mercerized and Plain

Skein, Warps, Cones, Cops, Tubes

COTTON YARNS

426 and 428 Market St., Phila.

Theo. H. Strouse & Co.

The Philadelphia Yarn Market.

While the cotton market has been firm and within the past few days has advanced to about the highest point of the season, the strength has not been reflected in the yarn market. In fact, there has been a decided weakness on a good many numbers, and business has been dull. Perhaps it is the usual August dullness that we are having at present. Probably business will improve, and prices stiffen during the next month, especially if cotton is held as firm and as high as at present.

It has been easier this month to obtain yarn from spinners than at any time during the year. Prices are on such a high level at present that jobbers are buying only for their actual needs, and we believe the speculative buying of goods is largely eliminated at present. As soon as jobbers decide that prices are settled for the season, there will undoubtedly be a good trade. The question now is to determine whether yarn will have to decline or finished goods advance.

Southern frame spun cones:—

7s and coarser	21½
8s and 9s	21¾-22
10s	22½
12s	23
14s	23½
16s	24½
18s	25
20s	25½
22s	26½
24s	27
26s	28
30s	30
40s	43
50s	56

Southern high grade mule yarn:—

Cones.

10s	24½
12s	25
14s	25½
16s	26½
18s	27½
20s and 22s	28-28½
24s	29

Southern frame yarn, lower grades:—

6s and 8s	21½
10s	22

Eastern cones (high grade quality):—

10s	26
12s	26½
14s	27
16s	27¾
18s	28¾
20s and 22s	29¼-29¾

Skein yarn (mostly Southern).—

4s and 8s soft	19-19½
10s and 12s	20½-21
14s to 20s	21½-23

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
73 Leonard Street, NEW YORK.
Brown Building, 185 Summer Street, BOSTON, MASS.
25 South Tryon Street, CHARLOTTE, N. C.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
DEP'T. FRED'K VIETOR & ACHELIS
COTTON YARNS
66-72 LEONARD STREET - - NEW YORK
J. R. TOLAR J. R. TOLAR, JR.
J. H. HART P. G. HART
TOLAR & HART
Cotton Yarns and Cotton
TEXTILE BUILDING
Members of New York Cotton Exchange
66-72 LEONARD ST. NEW YORK

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS } ALL NUMBERS
MERCERIZED YARNS } FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

LUDWIG LITTAUER,
Successor to MOELLER & LITTAUER.
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK.

C. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS

Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.

Main Office and Mills at Pawtucket, Rhode Island.

Carded and Combed Cotton Yarns for Weavers and Knitters.

Double and Twist Yarns for Woolen Trade.

Philadelphia Office, Mariner and Merchant Building, Third and Chestnut Streets.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND

FITCHBURG, MASS. **WARPS**

Ballou Yarn Co.

PROVIDENCE, R. I.

Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers

GASSED YARN SPECIALTIES

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

2124 to 2130 East York St., PHILADELPHIA, PA.

Wm. Chalmers & Co.

(Incorporated)

Imported and Domestic Cotton Yarns.

Turkey Red Yarns a specialty.

Correspondence solicited.

43 Leonard St. - - NEW YORK.

Scranton Yarn Finishing Co.

SCRANTON, PA.

Dyers of Skein Silk, Pure Dye and Weighted.

Mercerizers, Dyers and Coners.

THE RAVINE MILLS CO.

MANUFACTURERS OF

COTTON WARPS

In White and Colors on Beams and Jackspools

Specialty of Fast Black Twist on Jackspools.

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C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.

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THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

TEXTILE MACHINE WORKS

THUN & JANSSEN, READING, PA.

Manfrs of *BRAIDING MACHINES*

for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, Doublers, Measuring Machines, Reelers, Singeing and Finishing Machinery. Special Machinery.

NEW AND SECOND-HAND WOOLEN Machinery

GEO. L. SCHOFIELD, 123 No. Front St., PHILA., PA.

Agent for the Weston Hydro Extractor.

22s	24
14/2	22½
16/2	23
20/2	25
30/2	30
40/2	41
16/3 slack	23
12/3 slack	22
8/3 carpet	19½
8/3 slack	19½
9/4 slack	19½

Warps (Southern):—

10s to 12s	21-21½
14s	21½
16s	22½
20s to 22s	23-24
26s	27
14/2	23
16/2	24
20/2	25
24/2	27
30/2	30
40/2	42-43

Mixed colored yarns (mock twist, half colors):—

6s to 10s	23-23½
12s to 14s	24-25
16s to 18s	26-27

Mock Egyptian, 2c. advance over white.

Egyptian, 7 to 8c. above best quality white.

*Alabama, Tuscaloosa. The Tuscaloosa Cotton Mills advise that the loss caused by the recent fire at their plant was greatly exaggerated in all reports. The yarn and hosiery mill are being run full time. The burned mill will be rebuilt.

*Canada, Quebec, Valleyfield. The operatives difficulties have been adjusted, and the Montreal Cotton Company's plant is being operated in full.

*Connecticut, Bridgeport. We have been advised that the Mono Mfg. Company, in which Geo. A. Smith was reported as interested, will not manufacture textile fabrics.

*Connecticut, Central Village. The Plainfield Woolen Company reports that the only machinery which has been shut down is part of the carding machinery of the Central Yarn Company's plant, which they operate.

Georgia, Albany. The organization of a cotton mill is being projected at this place. The Business League has instructed J. A. Betjeman, T. W. Rawson and A. P. Vason to get information and raise subscriptions for a $200,000 mill. It is said that the prospects are very bright.

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

DUNCAN & YOUNGS
95 Worth Street, NEW YORK
Practical Manufacturers of
YARNS, THREADS, TWINES, CORDS, ROPE
AND MILL SUPPLIES
Anything in the line you cannot get anywhere else apply to us.

C. WOLFENDEN,
2316 N. Second Street, Philadelphia, Pa.
DEALER IN
YARN AND MACHINERY
Will buy Odd Lots of Yarn of Any Kind. Send Samples and Cash Price.

ATLANTIC FIBRE CO.
Luzonne Silk
Luzonne Linen
Write for Samples and Quotations.
Room 203 Wool Exchange Blg.
260 West Broadway,
NEW YORK.

Box Shook
and
Lumber
THE CONNECTICUT BOX CO.
New Haven, Conn.

The Merwin Paper Company
Hartford, Conn.
Press Papers and Fender Boards
Correspondence Solicited
Mills at Rainbow, Conn. Address Inquiries to Rainbow, Conn.

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at Thornton, R. I.

Office 100 Boylston St., Boston, Mass.

French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, River Ave. and Marlton St. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

Bradford System French System

STEPHENSON & CO.

Worsted and Woolen Yarns

240 Chestnut Street

PHILADELPHIA.

WORSTED YARNS

RICHARD CAMPION.

SELLING AGENT FOR

Bristol Worsted Mills,

Highland Worsted Mills.

The French Worsted Co.

300 Chestnut Street,

PHILADELPHIA, PA.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.

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KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

F. W. MAURER & SONS CO.

MANUFACTURERS OF

TAPES, BINDINGS, NARROW FABRICS AND EDGINGS FOR NOVELTY CURTAINS

Office, 528 Cherry St. Factories, 529 & 531 Arch St. and 524 Cherry St., and Germantown Ave. & Bristol St.

PHILADELPHIA

HOFFMAN, DeWITT & McDONOUGH CO.,

Manufacturers of

Diamond Stay Bindings TRADE MARK

Tapes, Webbing and Bindings.

COTTMAN and G STS., PHILADELPHIA

Ryer's Station, P. & R. R. R.

Bell Telephone, 263 Cheltenham.

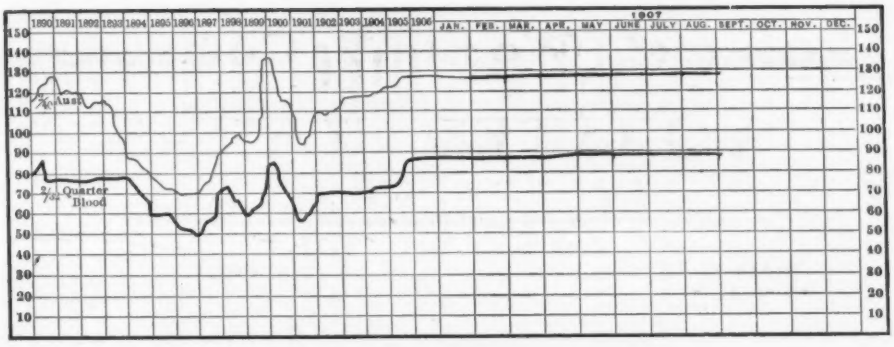


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

The Woolen and Worsted Yarn Market.

After a dull and quiet period for the past three weeks, with prices remaining firm and with very little change from our last report, the business in this section is reported as being in better shape than it has been for some time, more yarns are being sold and particularly among the men's wear and dress goods trades. It is getting nearer the time when they expect to give out larger orders. The manufacturers are getting out their sample pieces and making up sample garments and swatches to go on the road. The jobbing trade reports a fair amount of business.

The market, on a whole, is a waiting one from the mill standpoint, the early business being only fairly satisfactory and very few mills being sold up. The business done has been largely on the medium and better grades of worsteds. Cotton worsteds for which the demand has been so great for the past two years have been given a black eye. The boys' and children's clothing trade are asking for wool goods, which are meeting with greater favor among consumers.

The demand for knitting yarns is steady from all parts of the country, the Western mills showing a preference for worsted yarns for which they are placing large orders. Yarn dealers report that the greatest demand, along all lines, at the present time, is for 2/32s which, at this writing is selling at 85 cents to 87 1/2 cents. Mills running on this number are not only receiving many orders but are pushed for deliveries. Some spinners of 1/20 and 1/30, 3/8 blood French spun yarns, are willing to meet manufacturers half way on the prices for this quality in order to get business, but are doing so at very little profit to themselves. 2/13s up to 2/20s Bradford spun yarns are in slight demand.

Neither the weaver nor the spinner is showing uneasiness, both being well employed on orders.

We quote as follows:

BRADFORD YARN.

2/12 to 2 16 low common	72½-75
2/26 to 2/28 common	75-77½
2/12 to 2/20 1/4 blood	80-82½
2/26 to 2/28 1/4 blood	82½-85
2/32 1/4 blood	85-87½
2/20 3/8 blood	90-92 1/2
2/26 3/8 blood	92½-95
2/36 3/8 blood	97½-1.00
2/40 1/2 blood	1.10-1.15
2/40 delaine	1.21-1.22½
2/50 delaine	1.30
2/40 Australian	1.30-1.32½
2/50 Australian	1.37½-1.40
2/60 Australian	1.50-1.52½
2/24 lustre	85
2/28 lustre	85-90
2/30 and 3/32 lustre	90-92½
2/36 lustre	95-1.00
1/24 worsted and 80s single cotton for raincloths	1.00-1.05
1/24 worsted and 120s single cotton for raincloths	1.15-1.20

FRENCH SPUN YARN.

1/20 1/4 blood	85-87½
1/20 high 1/4	93-95
1/20 high 3/8	1.05-1.07½
1/20 1/2 blood	1.10-1.12½
1/20 3/8 blood	1.00-1.02½
1/30 high 1/4 blood	95-97½
1/30 3/8 blood	1.07½-1.10
1/30 1/2 blood	1.12½-1.15
1/40 1/2 blood	1.15-1.17½
2/50 1/2 blood	1.30-1.32½
1/50 delaine	1.22½-1.25
1/40 Australian	1.32½-1.35
1/50 Australian	1.37½-1.40
1/60 Fine Australian	1.40-1.45
1/70 Fine Australian	1.45-1.50

North Carolina, Dallas. It is reported that a cotton yarn mill will be started at this place. W. S. Robinson and H. F. Forbes are reported interested, and it is stated that they propose to organize a capital stock of $100,000.

NON-FLUID OILS

CAN YOU TELL?

WHY are you satisfied with your present lubricant, (oil or grease)?
WHY do you think it's the BEST obtainable?
WHY do you think it is the most economical?
Just answer the above questions to yourself and then send for an express paid, free sample of

NON-FLUID OIL

We'll send the oil. You do the THINKING.

New York & New Jersey Lubricant Co., Dept. H, 14-16 Church St., New York City.

Georgia, Griffin. It is reported that a company will be organized and capitalized at $150,000 for the manufacture of cotton blankets. It will be known as the Cherokee Mill. J. J. & J. W. Mangham, J. L. Davidson and others are at the head of the enterprise.

*Georgia, West Point. The Lang Mfg. Company reports that they are merely building a cotton ware house. Contract has been let and everything ordered.

*Maine, East Wilton. We have been advised that the Walker Mills will shut down about September 1st for an indefinite period. The management is undecided whether to sell or lease the property. The Allen-Lane Company (Boston) controls the plant.

New York, Gouverneur. It is reported that Clarence Whitman & Co. will operate the plant of the International Lace Co. on lace curtains.

New York, Marlboro. It is reported that Sutcliffe Brothers, whose yarn mill was recently destroyed by fire, will commence rebuilding at once.

North Carolina, Jamesville. It is reported that the Boyle Mfg. Co. has been incorporated with a capital stock of $30,000. J. P. Boyle and others are the incorporators.

*North Carolina, Wadesboro. It is reported that the Wadesboro Cotton Mills Co. are considering increasing their capital stock to $100,000.

Pennsylvania, McVeytown. The John J. Booth Co., manufacturers of rag carpets on 17 looms, is no longer in existence, the company having failed and the plant being sold out by creditors. A dye house was operated in conjunction with the carpet business.

Pennsylvania, Philadelphia. It is reported that the Primrose Tapestry Co., located at Oxford & Josephine Sts., Frankford, which recently purchased the plant formerly operated by the late Fred K. Holdsworth at 1824 Cadwallader St., will consolidate the two plants at the Cadwallader St. Mill.

Pennsylvania, Siegfried. The Central Silk Mfg. Company which has been running about a year is incorporated at $20,000. Ogden E. Frederick is president; Dr. W. Wiloughby, treasurer; and J. H. Frederick, superintendent. Thirty looms are operated on broad silks.

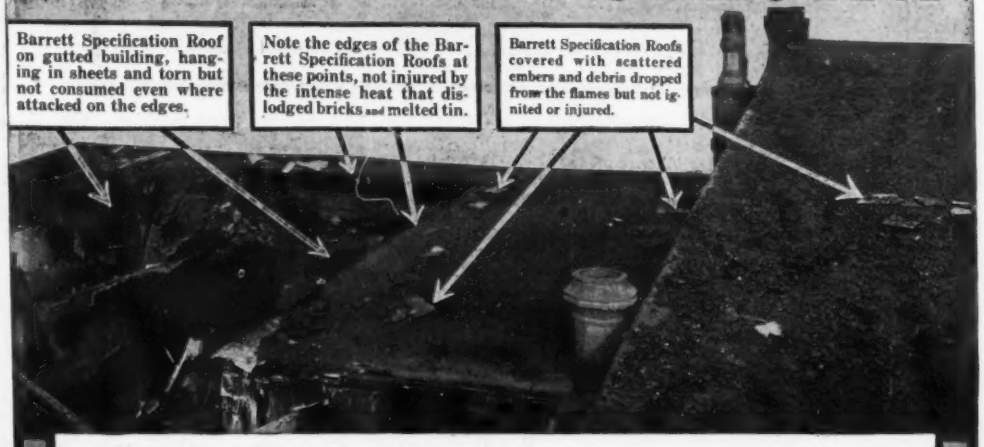
WILLIAM B. CHARLES,
Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,
For the Underwear Trade.
AMSTERDAM, N. Y.
Boston Office, 200 Summer St.

EDWIN F. SCHOFIELD
ALL GRADES
PULLED AND FLEECE WOOLS
FOREIGN NOILS, CARPET WOOLS.
COTTON WASTE
New York Office 256 Church Street
Mariner and Merchant Building,
3d and Chestnut Streets, Philadelphia, Pa.

JOSEPH M. ADAMS CO.
WOOLEN YARNS,
Carpet Backing and Rug Yarns a Specialty.
ARCOLA MILLS,
Main St., foot of Centre St., Manayunk, Philadelphia.

Knitting and Weaving
YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.
EDWARD S. HYDE,
226 CHESTNUT STREET,
Philadelphia, Pa.

REAL FIRE PROTECTION


Barrett Specification Roof on gutted building, hanging in sheets and torn but not consumed even where attacked on the edges.
Note the edges of the Barrett Specification Roofs at these points, not injured by the intense heat that dislodged bricks and melted tin.
Barrett Specification Roofs covered with scattered embers and debris dropped from the flames but not ignited or injured.

BARRETT SPECIFICATION ROOFS

THE accompanying photographs illustrate forcefully the fire retarding properties of Barrett Specification Roofs.

They prove beyond question that roofs of this character give *real fire protection* and not ignite when exposed to a neighboring conflagration.

The photographs show part of the ruins of the Kenyon Hall fire in Allegheny, Pa., which destroyed $200,000 worth of property on February 17th, 1907.

The buildings illustrated were roofed along the lines of The Barrett Specification, and, although scores of burning embers fell upon them during the fire, they stood the severe test *without damage of any kind* except where the support was burned away from below, causing the roof to fall through.

Because Barrett Specification Roofs are constructed of Felt and Coal Tar Pitch it is sometimes assumed that they are not fire retardant. *Experience proves, on the contrary*, that they are a much more efficient fire retardant than Tin or Slate, which of themselves will not burn, and of course vastly more so than prepared roofings.

Repeated tests by fire marshals and fire underwriters have demonstrated that roofs laid according to The Barrett Specification are fire retardant in the full sense of the word. The best proof that they are so considered is the fact that a very large proportion of the manufacturing plants and railroad buildings of the country are covered with these roofs, as are also practically all of the famous fireproof sky scrapers of the land.

BARRETT SPECIFICATIONS in full will be sent on request to any one interested.

Barrett Manufacturing Co.

New York, Chicago, Philadelphia, St. Louis, Cleveland, Allegheny, Cincinnati, Kansas City, Minneapolis, New Orleans, Boston, London, Eng.

CHENEY BROTHERS

Silk Manufacturers. So. Manchester, Conn.

Trams, Organzine and Spun Silks in the hank, or on spools and cones for woolen manufacturers.

Silks for electrical uses, insulation and special purposes made to order.

Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Dress Silks, Satins, Linings, Printed Pongees, Foulards and Decorative Silks; Upholstery Goods, Ribbons, Sashes, Plushes and Velvets.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

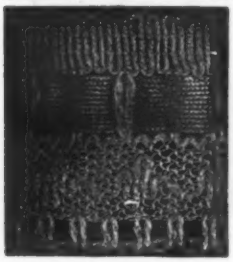
SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.



GEORGE W. CHAPIN,

BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. **TAPES** Common, Twilled, Superfine and Fancy 18 to 36s, white and colors on spools.

YARNS Cops, Skeins, Warps, Tubes and Cones. **THREADS** on Spools, Tubes, Cones, Unbleached Bleached and Colors for Manufacturers' use.

CROCHET LACE EDGINGS Latest Styles in Point Laces.

229 Church Street 231 . . PHILADELPHIA

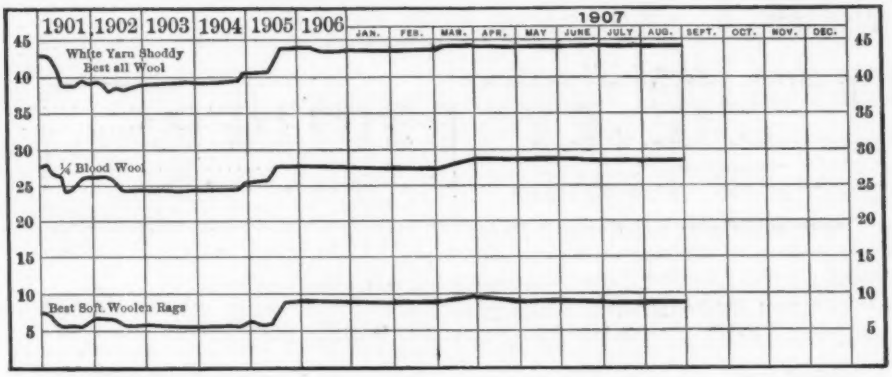


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

The Rag and Shoddy Market.

This is a dull season in a market already depressed. Business during the month has been limited to occasional purchases to piece out some grade that has happened to run short in the mills. The general slackening of business throughout the country, and the approach of a presidential election do not leave much basis for expecting any material improvement. Trade is likely to remain restricted until the return of more settled conditions and of the cheviot finish to popular favor.

Cotton and wool wastes are dull. Only very desirable lots succeed in attracting the attention of buyers.

SHODDIES AND EXTRACTS.

White yarn, best all wool	40
White knit, all wool, best fine	35-40
White knit, No. 2	28-30
Light yarn, extra fine	25-28
New pure indigo blue	24

Merino.

Fine light, all wool	26-28
Medium light, all wool	18-20
Fine black, all wool	26-28
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 2	15-17
Red knit stock, strictly all wool	22-24
Red flannel, all wool	22-24
Dark blue for hosiery, strictly all wool, No. 1	20-22
Dark blue for hosiery, not all wool, No. 2	16-18

WOOLEN RAGS.

Fine merchant tailors	10-11
Choice light colors	13-14
Browns	11-12
Blacks	9½-10
Fine blues, plain	9-10
Fine dark	11-12½
Medium dark	7-8

Worsteds.

Blue	16-18
Black	21-23

Serges.

New black	16-18
New blue	15-17

Flannels.

New scarlet	18-19
New blue	15-16
Cloakings	3-3½

SOFTS AND KNIT STOCK.

Soft woolens, best	7-7¼
Old white flannels	16-19
Old red flannels	13¼-14
Old blue flannels	6-7
Old plaids	4½-5
White stockings	24-25
White hood stock	21-22
Clear hoods	10-11
Blue stockings	9¾
Fancy stockings, No. 1	9½
Gray stockings	11-12
Black stockings	9-10
Knit stock comforters	7-8
Red knit	12-12½
Light gray knit	9-10
New light fancies	10
New fancies	10¾-11¾

Merinos.

Light, fine	14-15
Light, coarse	7-7½
Fine, dark	13-13½
Coarse, dark	5-5½
Blue	11-12
Black	13-14

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	8-9
Fine black and blue, all wool	6½-7

WILLIAM B. CHARLES,
Cotton and Wool Wastes
Amsterdam, N. Y., U. S. A.

COTTON YARNS.
Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."
Boston Office: 200 Summer Street.

SHODDY W. H. H. SLACK & BRO. SPRINGFIELD, VT.
Established 1871 FLOCKS

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.
RIVERDALE WOOLEN CO., MANUFACTURERS OF
.. Shoddies ..
of every description. Capacity 7,000,000 pounds per annum.
Custom Carbonizing and Garnetting a Specialty.
New York Office:
140 DUANE STREET. RIVERDALE, NORTHBRIDGE, MASS.

East Brady Woolen Company
Manufacturers of
WOOL SHODDIES
Samples on application
EAST BRADY, .·. .·. PA.

TIME CHECK 100 O.I.B.S.CO.
FACTORY TIME CHECKS
They are being used more and more
Write for our pamphlet
"Time Checks and Their Use"
AMERICAN RAILWAY SUPPLY CO.
Address, Dept. V, 24 Park Place, New York

Lowell Crayons
Meet the requirements of any cotton, woolen or worsted mill.
May we send samples? 15 colors and white.
Lowell Crayon Co., Original Manufacturers Lowell, Mass.
Trade Mark on every box.

Fine dark, all wool	4½-5
Gig, fine, all wool	1¼-4
No. 1 black, all wool cut	6-8

COTTON WASTE.

No. 1 Spinners	11-11½
Machine Cop	7½-7¾
No. 1 Cop	8¼
No. 1 Card	8-10
No. 2 Card	8-9
No. 1 Oily Card	6
No. 2 Oily Card	4
Peeler Combing	12½-13
Egyptian Combing	11½-12
No. 1 Linters	4½
No. 2 Linters	3½-3¾
Woven White Clips	6
Woven Colored Clips	2-2½

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2½-2¾
Citric, domestic	52-53
Oxalic	8¾-9
Sulphuric, 60 deg., 100 lbs.	1.00-1.50
Muriatic, 18 deg.	1.10-1.75
Tartaric crystals	28¾-29¼

Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.50-2.55
Alum, lump	1.75-1.80
ground	1.85-1.90
powdered	3.00-4.00
Aqua ammonia, 16 deg.	4¾-5¾
Ammoniac, sal., gray	6¼-6½
Borax, bbls.	7½-8½
Brimstone, crude, foreign ton	22.50
Copperas	55-65
Cream tartar, crystals	23¼-23¾
Fuller's earth, powdered, ton	18.00-22.50
Glauber's salt	45-60
Potash, chlorate, crystals	9¼-9½
powdered	9½-10
carbonate	4-5½
Soda, bicarbonate, English	3
American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.80-2.00
Sal. American	70-85
Sulphate, alumina	1.45-2.00
Vitriol, blue	7-7½

Dyestuffs.

Acetate of soda	4¼-4½
Acid, picric, best crystals	23-26
tannic, commercial	34-40
Albumen, egg	50-75
blood	22-30
Alizarine, red	15½-16½
Aniline, oil	11¼-11½
salt crystals	9⅞-10½
Antimony salt, 65 per cent.	22½-25½
Bichromate of potash, American	8⅝-9
Bichromate of soda	7⅛-7½
Bisulphite of Soda	90-1.15
Cutch, mat	4¾-6
boxes	5-7

FIRE, LIGHTNING, WINDSTORM.

The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1st, 1906	$20,839,174
LIABILITIES (Including Capital)	13,430,818
NET SURPLUS OVER ALL LIABILITIES	7,408,355
Surplus as regards Policy-holders	10,408,355
Losses Paid Since Organization Over	105,000,000

Note amount of net surplus after providing for all San Francisco losses.

HOME Policy-holders everywhere have protection, which is sure, notwithstanding conflagrations anywhere.

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

ELBRIDGE G. SNOW, President.

EMANUEL H. A. CORREA, Vice-Pres. AREUNAH M. BURTIS, Secretary.
FREDERICK C. BUSWELL, Vice-Pres. CHARLES L. TYNER, Secretary.
CLARENCE A. LUDLUM, Ass't Sec'y. HENRY J. FERRIS, Ass't Secretary.

Dextrine, imported potato	**5¾-7**
corn	**2.75-2.90**
Divi-divi, ton	**47.50-55.00**
Flavine	23-50
Fustic, stick, ton	**17.00-20.00**
young root	**45.00**
Gambier	4½-4¾
Hypo. of soda, Am. bbls. cwt.	1.50-1.75
Indigo, Bengal, low grade	**55-65**
medium	62½-65
high grade	**77½-90**
Kurpahs	50-65
Gautemala	45-72½
Manila	40-55
Madras	42½-50
J. (Synthetic)	**18-20**
Indigotine	**95-1.80**
Logwood, stick, ton	**18.00-22.00**
roots	**16.00-19.00**
Madder, Dutch	12½-15
Muriate of tin, 36 degrees	**9-9¼**
52 degrees	**15-15¼**
Nitrate of iron, commercial	1¼-1¾
Nutgalls, blue Aleppo	16-18
Persian berries	20-25
Phosphate of soda	2-2½
Prussiate of potash	16-16¼
Quercitron, ton	21.00-25.00
Starch, corn, pearl, bbls.	**2.35**
corn, pearl, bags	**2.20-2.40**
potato	3½-4¼
rice	**6½-7**
wheat	5¼-6
Stannate of soda	12¼-15
Sumac, Sicily, No. 1, ton	75.00-85.00
Sicily, No. 2, ton	70.00-80.00
Tapioca flour	1¼-4
Tin crystals	24¼-28¼
Tumeric, Madras	4½-7
Zinc dust	**6-6½**

*Pennsylvania, Philadelphia. The Ideal Hosiery Mills are now operating 54 knitting machines on infants', misses' and ladies' lace hosiery.

*Pennsylvania, Philadelphia. F. A. Bochman & Company expect to have the machinery in operation in their new building at Second & Cambria Streets, early in September.

*Pennsylvania, Wilkesbarre. The Hess-Goldsmith Co. report that the addition they are building is simply an enlargement of the offices to the So. Wilkesbarre plant.

Rhode Island, Pawtucket. The Smith Webbing Co. is considering plans for the erection of a brick addition.

South Carolina, Seneca. It is reported that a knitting mill will be established at this place. T. M. Street is reported as interested.

*South Carolina, Spartanburg. We have been advised that there is no prospect of the proposed cotton mill, in which Elisha Bomar is reported as interested, being organized immediately.

Looking for Work

This scene is enacted daily in front of The Chicago Daily News offices. From 200 to 500 men and women assemble there every day waiting for the papers to appear with their long columns of "help wanted ads."

How easily any one in this crowd could put himself forever above such a quest for insignificant, poorly paid positions. The only reason that it is necessary to race with hundreds of others to apply for such a position is that almost anyone is qualified to fill it and the first applicant will doubtless secure it. *It is only positions that require special training, special skill, special knowledge that must and do seek the man.* Hundreds of such positions are advertised day after day and still cannot be satisfactorily filled.

The American School of Correspondence is constantly fitting thousands of young men to start life in positions where there is an assured future for a man of ambition and brains. It is taking older men from poorly paid, uncongenial work and placing them where they can secure better pay, better future, better hours and better work for the rest of their working days.

We employ no agents to annoy you with repeated call at your home or place of business. We talk to you only by mail. The money you pay us is not used to maintain an expensive organization of high priced agents, but is used to give you better instruction at a lower cost.

American School of Correspondence
Chicago, Illinois

COUPON
(Cut on dotted line)

Send me 200-page hand-book describing over 60 courses. I am interested in the course marked "X."

—Woolen and Worsted Supt.	—Boss Dyer
—Woolen and Worsted Designer	—Cotton Yarn Supt.
—Boss Woolen and Worsted Spinner	—Cotton Designer
—Boss Woolen and Worsted Carder	—Boss Cotton Spinner
—Boss Finisher	—Boss Cotton Carder
—Boss Weaver	—Cloth Examiner
	—U. S. Inspector
	—Buyer
	—Knitting Mill Supt.
	—Boss Knitter

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Address.....

Tex. World Rec., 9-'07.

Headquarters for textile information, textile literature and textile advertising

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Boston, Mass.

Our publications

reach practically *all* of the textile establishments in the United States and Canada

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York, Emerald and Adams Sts., Philadelphia, Pa.

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Dyeing and Finishing of Piece Goods Exclusively, such as Wool Armures, Prunellas, Satins and Henriettas. Panamas, Poplins, Serges and Cheviots. Mohairs, Bradford Finish, in Fancy and Solid Colorings. Also Suitings and Cloakings.
Specialty in the Treating of Silk and Wool Fabrics, such as Eolliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

SPECIAL ATTENTION IS GIVEN TO THE REDYEING OF ABOVE

Cohoes Dyeing Company

195 Mohawk Street, Cohoes, N. Y.

Dyers and Bleachers for the Knit Goods Trade

ROLL AND GARMENT DYEING

Fast colors on Wool and Cotton. **Sulphur Blacks on Cotton (Raw Stock)**

Dont Worry About the Finish

of your cotton goods our

"LOYDALENE" FINISH

can fix it

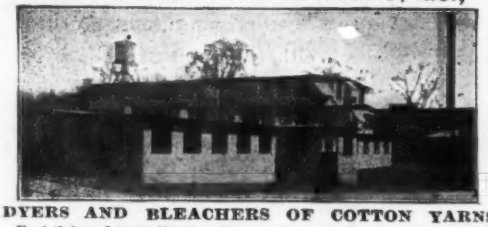
Tell us your trouble anyway--we can help you

Nicetown Mfg Co. 4303-09 No. 18th St., Philadelphia.

MILL SOAPS AND TEXTILE SPECIALTIES

Established 1881.
Peter B. McManus, Prest. and Treas. Peter B. McManus, Jr., Asst. Treas. Edw. J. McCaughey, Sec'y.

HOME BLEACH and DYE WORKS, Inc.,



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Fast Colors for the Woolen Trade. Capacity 20,000 lbs. per day.
Office and Works, Pawtucket, R. I.

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MAX SARFERT, Prop.

Dyeing, Coneing, Twisting and Tubeing of Cotton, Woolen and Worsted Yarns.

Dyers of Cotton Warps and Hosiery in Fast Black and Colors.

Dealers in all Kinds of Yarn for the Trade.

"N. B. We are successfully dying cotton yarns on parallel tubes and would be pleased to send a sample to interested parties."

Cross-Dye Colors a Speciality.
Yarns Furnished on Dresser Spools.

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MERCERIZED YARNS

FOR ALL PURPOSES.

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Of Turkish Towels, Cotton Yarns, Underwear and Tapes.

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GLOBE DYE WORKS CO., Successors to R. Greenwood & Bault

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Globe Bleach and Dye Works,
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We are Dyers of all kinds of YARNS AND **Cotton Warps**

We are sure we can give you better work and better service that you can get elsewhere. A trial will convince.

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YARNS BLEACHED AND DYED (delivered on cones)

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ESPECIALLY FOR THE

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INCRAHAMVILLE DYE WORKS,

Dyers and Bleachers of Cotton Yarns in Long or Short Chain Warps and Skein, in FAST COLORS, FOR BLEACHING PURPOSES, Cross Dyeing, Ginghams, Etc.

Also Dyers of Turkey Reds and Indigo Blues for all purposes in either Warp or Skein.

Telephone. PAWTUCKET, R. I.

Pawtucket Dyeing and Bleaching Co. Bleachers and Dyers of COTTON YARNS and STOCKINET

Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.

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THE PEERLESS COMPANY,

Dyers of Skein Silk

FOR ALL TEXTILE PURPOSES

Willard and Jasper Sts., Philadelphia.

Pure Dye and Weighted. Bright and Souple.
Dyers of Peerless Black on Artificial Silk.

A. KLIPSTEIN & CO.

Dyestuffs and Chemicals

Fast Colors for Wool and Cotton.
Full Line of Direct Cotton Colors.

THIOPHENOL BLACK T EXTRA and 2 B EXTRA.
PYROGEN BLUE R . . . .
PYROGEN INDIGO. . . . .

} Direct Sulphur Colors, Faster than Indigo, to light and Washing.

Chrome Fast Blacks, Blues, Browns and Yellows.
Acid Benzyl Blue, Violet Green and Black.

Headquarters for Caustic Potash 90%. Carbonate of Potash. Chlorate of Potash and Soda. Tannic Acid. Bleaching Powder.

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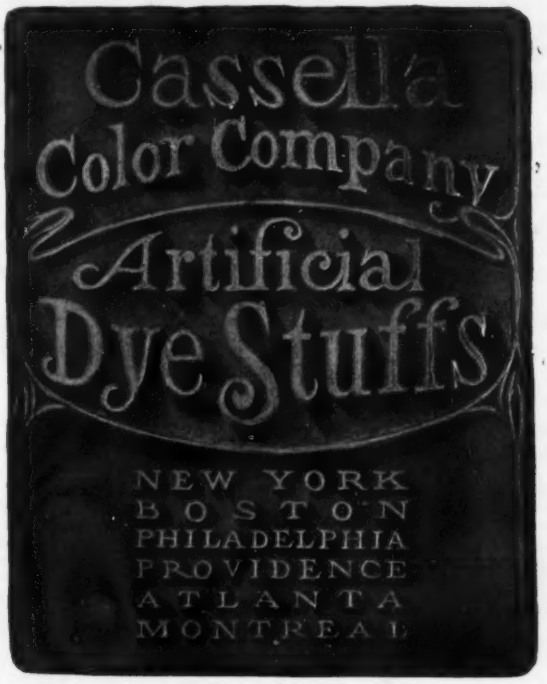

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animal & vegetable fibres or their mixtures is the best.

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SPECIALTIES
Sulphur Blacks, Sulphur Blues, Sulphur Browns, Sulphur Greens, Sulphur Yellows, Indocyanines, Nerols
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Alizarine Colors, Extracts and Chemicals

GEISENHEIMER & CO.
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DYESTUFFS,
DYEWOOD EXTRACTS.

AUTOGENE BLACK BEE
Manufactured by
The St. Denis Dyestuff and Chemical Company, Ltd., PARIS, FRANCE
Originators of the Sulphur Color Industry
AS REGARDS SHADE, DURABILITY AND COST OF DYEING, THE BEST SULPHUR BLACK EVER PRODUCED
SAMPLES AND FULL PARTICULARS FROM
Walter F. Sykes & Co., Sole U. S. Agents
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"WE LIVE BY DY(E)ING"

WE DYE
cotton, mercerized, woolen and worsted yarns

WE DO
CONE WINDING

WE BLEACH
cotton and mercerized yarns

The Western Thread and Dye Works, Chicago.

ARABOL MANUFACTURING COMPANY,
100 William Street, New York.

Sizing, Stiffening, Softening and Finishing Compounds, Glues, Gums, Dextrines, Starches, China Clay, Bone Size and Grease, Soap, Tallow, Weighteners,
EVERYTHING IN SIZINGS, Etc. SAMPLES MATCHED. HIGH GRADE GOODS.

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PYROL COLORS FOR COTTON
of every shade and description, absolutely fast to sunlight, fulling, acids, etc.

Domingo Alizarine and Domingo Chrome Colors for Wool,
dyeing either after the one bath method absolutely fast, or on chrome bottom.

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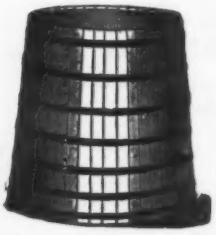

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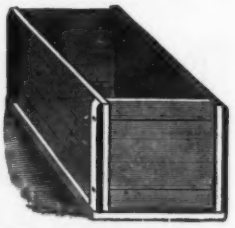

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Built to Last

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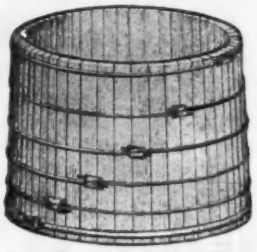

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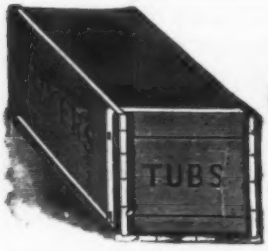

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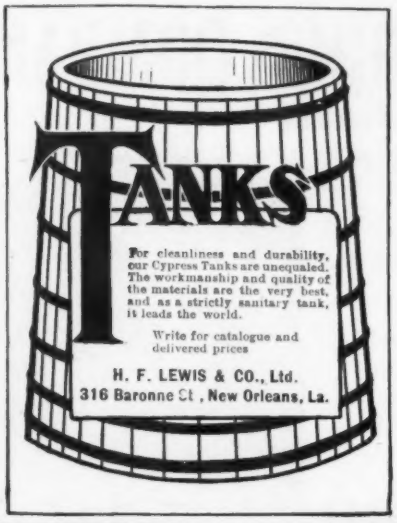
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For cleanliness and durability, our Cypress Tanks are unequaled. The workmanship and quality of the materials are the very best, and as a strictly sanitary tank, it leads the world.
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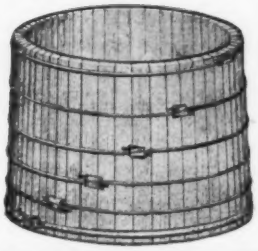

THE COHNEN

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Dyeing Machine

U. S. Patent 776,295, Nov. 29, 1904.

Dyes Raw Stock
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DYES SULPHUR COLORS
without bronzing or streaking and leaves the stock in perfect condition for carding or weaving.

ONLY ONE HANDLING
is required to dye, oxidize and hydro extract ready for the drying room.

The Machine may be seen in operation by applying to the American Agents.

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Made to suit all the different kinds of machines. The high quality of my dye sticks is shown by a constantly increasing demand that has necessitated enlargements of facilities to six times their original capacity. Now they are used all over the world. Write for prices.

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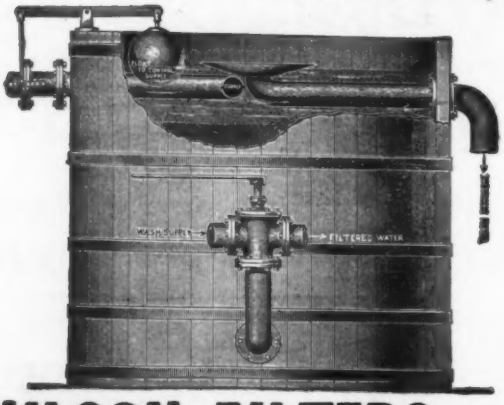

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Our filters are already in use in a number of the representative textile mills of the country, from whom we have received many expressions of satisfaction. Our representative will call and explain our system whenever desired.

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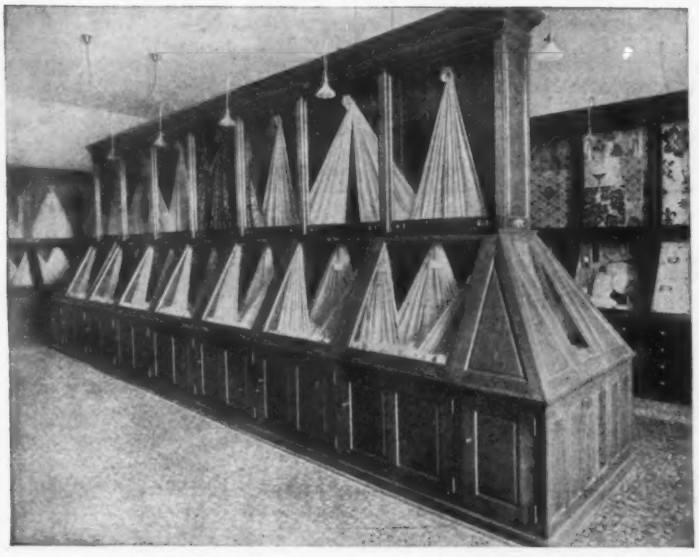

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TRIPLE THE EFFICIENCY of YOUR OPERATORS.

(1) Cutting Out Neck Piece
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all in One Simple Operation.

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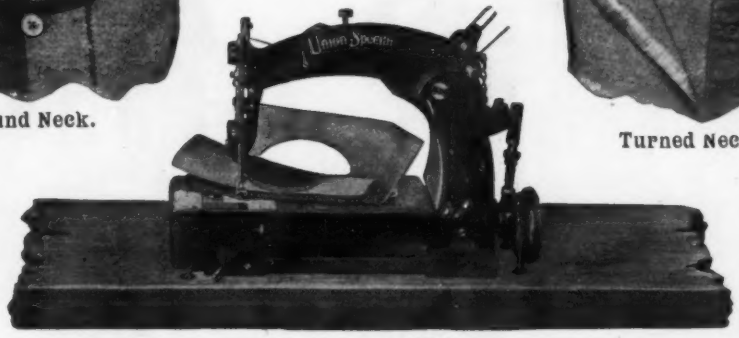
Perfect Work.



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SPECIALLY DESIGNED FOR "NECKING" KNIT UNDERSHIRTS.

The one machine may be used to make either turned or bound necks.

(Both operations on this machine, patent applied for.)

Most Durable Sewing Mechanism Ever Constructed.

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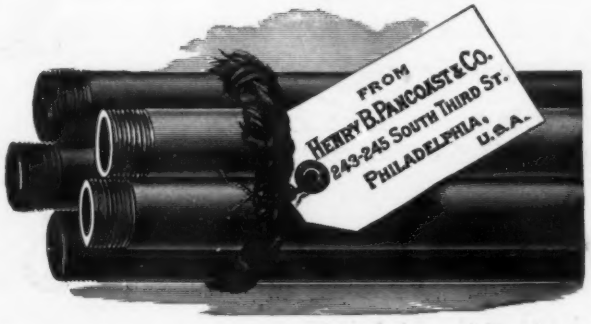

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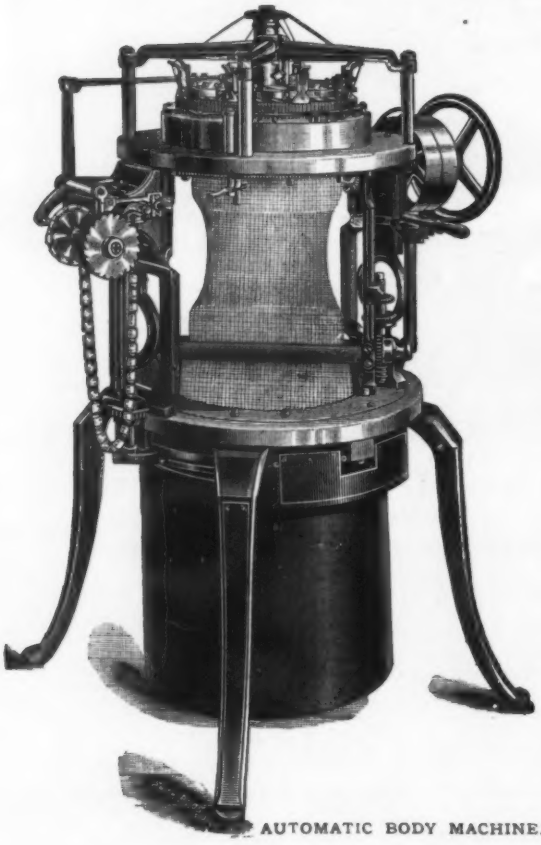
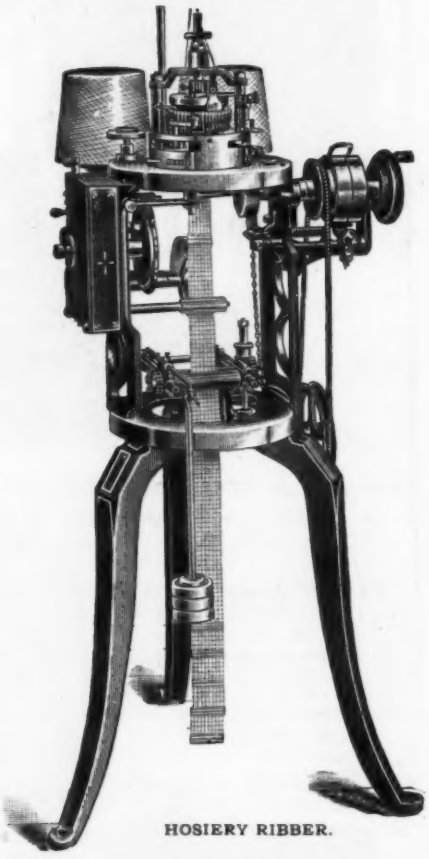
For all classes of Ribbed Hosiery and Underwear, Combination Suits, Sweaters, etc.



AUTOMATIC BODY MACHINE.



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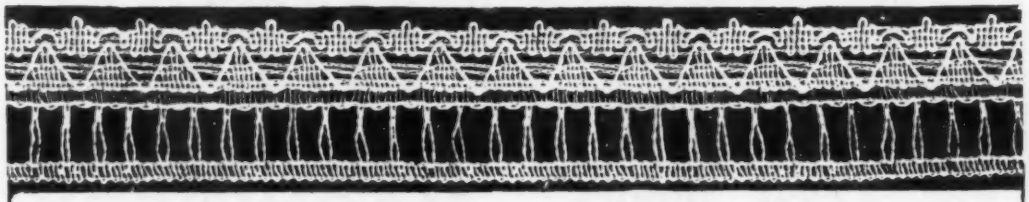

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NEW LINE for 1907 and 1908 for trimming Ladies Underwear **now being shown.**

Mills: Germantown, Philadelphia

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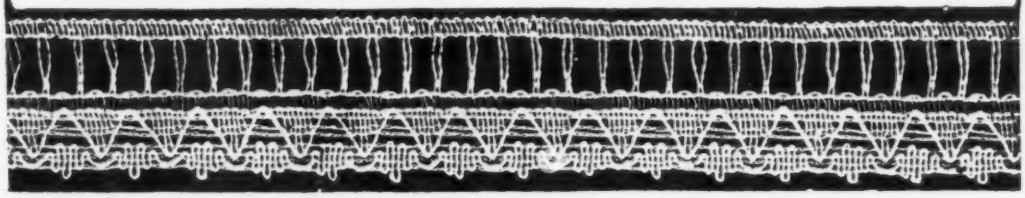
(We caution competitors from infringing on our patented designs.)



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New Full Automatic Knitter

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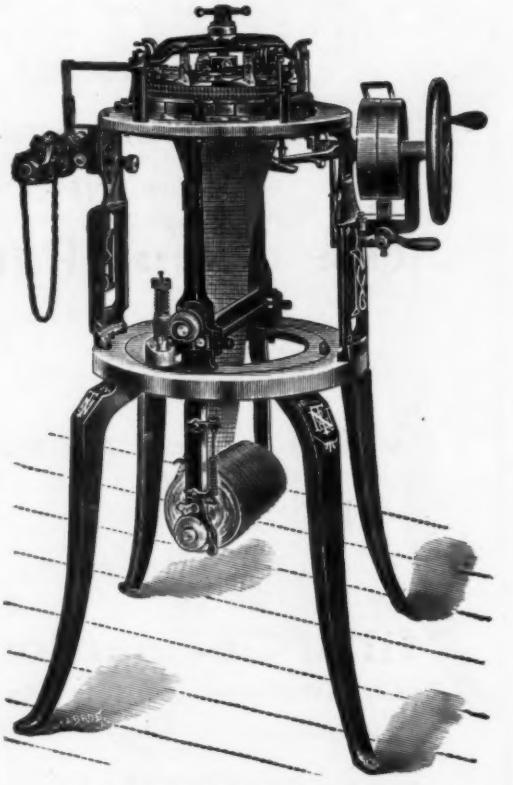
For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. : ; :

Correct Construction. Excellence and Durability.



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UNEXCELLED

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The Most Productive, Strongest and Best

Full Fashioned Hosiery Machines

System **G. Hilscher, Chemnitz, Saxony,**

Can Be Delivered in Short Time and Fully Guaranteed
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THE GROSSER KNITTING MACHINE CO.

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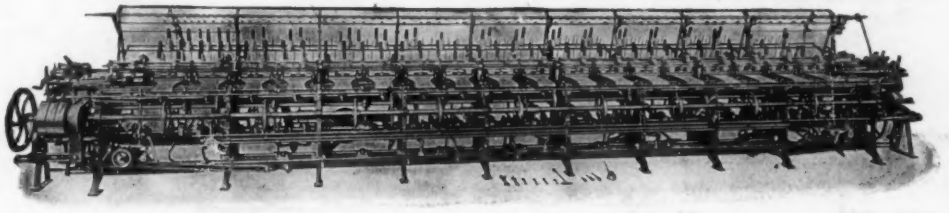
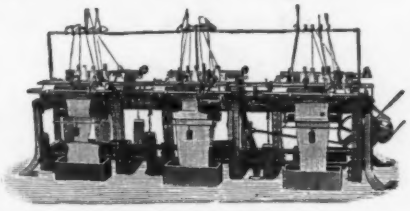


18 Section "COTTON HILSCHER" Machine for Full Fashioned Silk Hosiery
Gold Medal, Paris, 1900 Numerous Patents Covering Special Improvements

All Special Machines For Any Article That Is Knit



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For HAND Power or FULLY AUTOMATIC Power MACHINES. Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.

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For Fancy Goods in largest variety, Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc., in silk, wool, cotton.

SPOOLERS, Parafiners, Finishing Machines for the knitting business.

Exclusive Agency for the Famous

Julius Koehler DIAMENT OVERSEAMERS, indispensable for all full fashioned articles, Hosiery, Gloves, Jersey Sweaters, Sporting Goods, etc.

LOOPERS Double thread Lock stitch, self-cutting and cleaning attachment. Reliable money saver.

FRITZ ZACKE LATCH NEEDLES, for any purpose in the knitting line, patented rivets.

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ALL KINDS OF NEW AND SECOND HAND **KNITTING MACHINERY**

A RARE OPPORTUNITY TO BUY.

1 Bruce band folder and cutter.
38 Beattie & Hepworth & Abel loopers.
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114 Lamb and Grosser sweater machines.
200 Ribbed underwear machines, various sizes.
50 Brinton & Co. ¾ aut. knitters, sizes.
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100 feet woven rubber hose, 3 inches dia.
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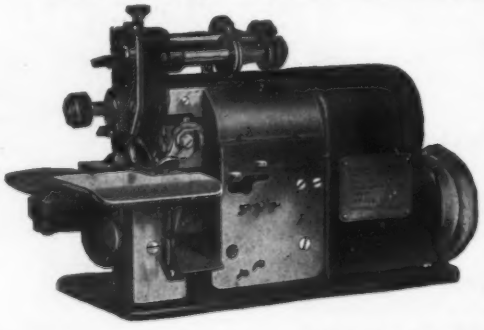
Light Running

High Speed Overseaming, Overedging and Scallop Stitch Machines are



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For the manufacture of hosiery in cotton, lisle or silk in all guages, from 14 to 32 needles (spring beard) to the inch, from 12 to 24 sections, built by

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in cotton-system with split, striping, single and double lace attachments.

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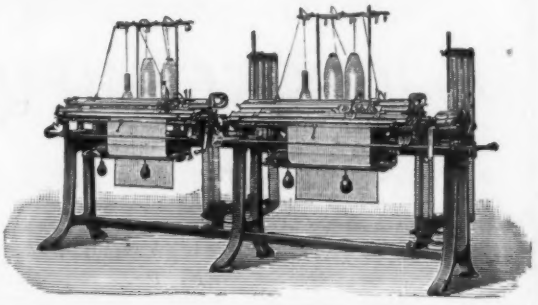
for the manufacture of sweaters, cardigan jackets, ladies' blouses, vests, gloves, etc. The picture represents a full automatic power machine with independent heads.

Catalog on application.



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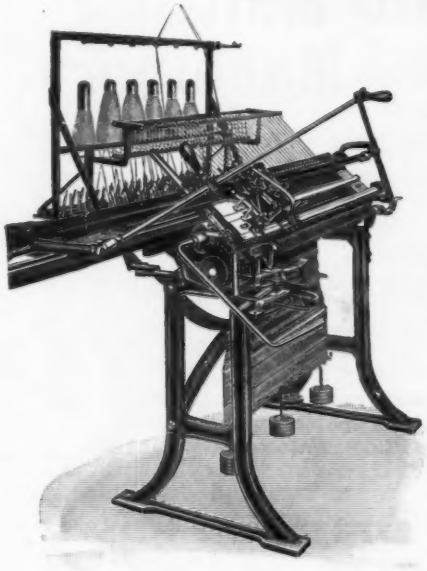

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Knitting and Winding Machines

for hand and power driving, of best quality and perfect construction.

Specialty: Jacquard Machines

for hand and power driving for manufacturing of sweaters and every possible fancy article of that nature.

PRICE LIST AND SAMPLE ON APPLICATION

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The Invincible

Full Automatic.

"The KNITTER that KNITS"

THE LARGEST PRODUCER OF PERFECT WORK.
SIMPLE, POSITIVE AND EASY TO OPERATE.

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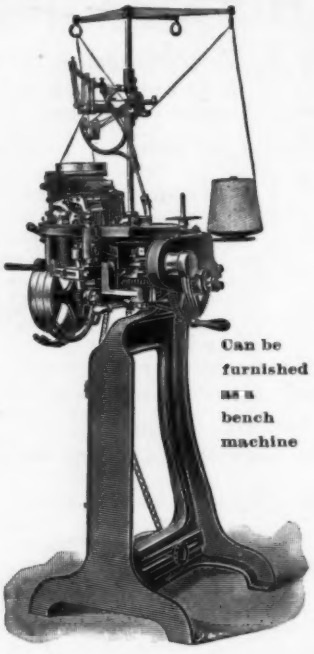
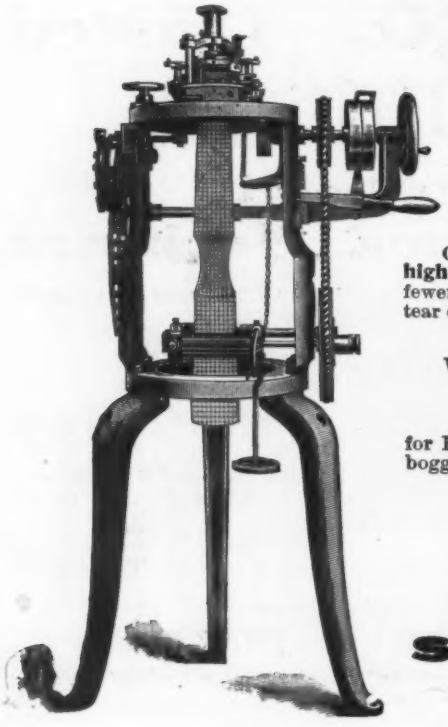


Can be furnished as a bench machine



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Our latest model machinery has been designed to run at very high speed, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

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for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

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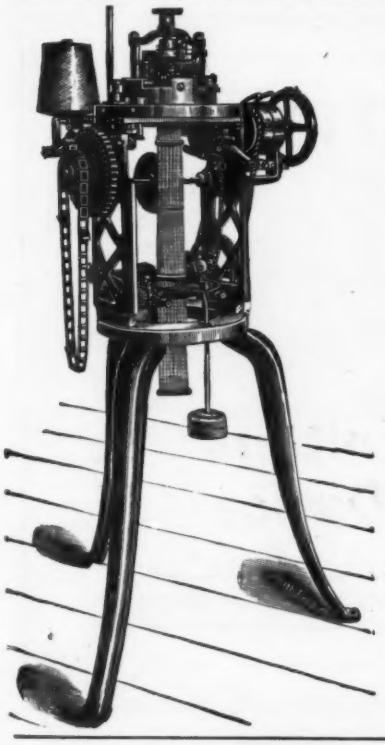

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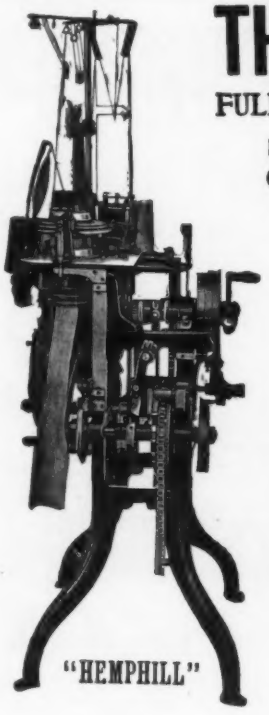
For HOSIERY and UNDERWEAR.

Complete Estimates Furnished. Send for Particulars.

The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.



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THE TWO LEADERS

FULLY AUTOMATIC HOSIERY KNITTERS

FOR MAKING ALL KINDS AND GAUGES OF SEAMLESS HOSIERY

One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

Both used and approved by leading hosiery manufacturers.

Both contain all the well-known essentials demanded of first-class knitting machines.

With these two machines we can supply all manufacturers' possible wants in the best possible manner.

Write us for further particulars and prices.

We also make all kinds of **LATCH NEEDLES.** Many leading manufacturers use our needles and say they are the best on the market. Send us a trial order.

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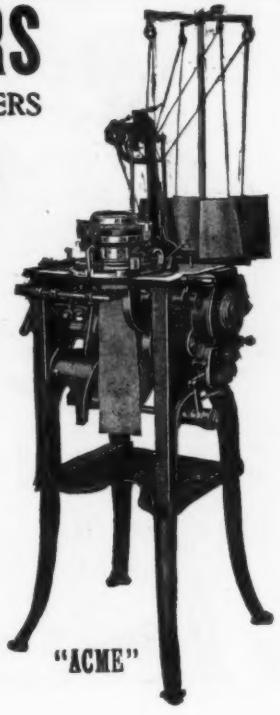

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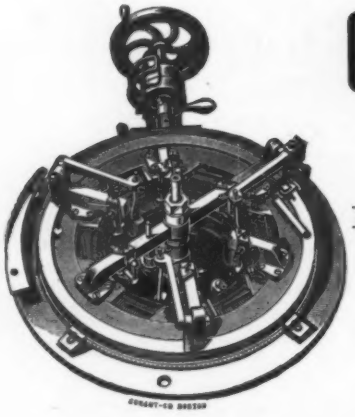

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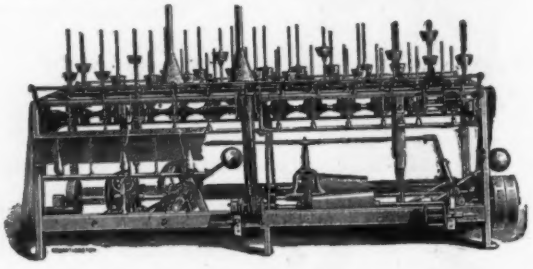

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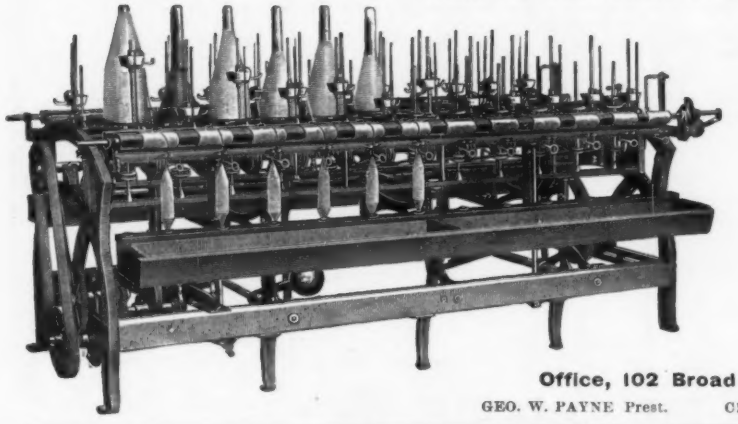

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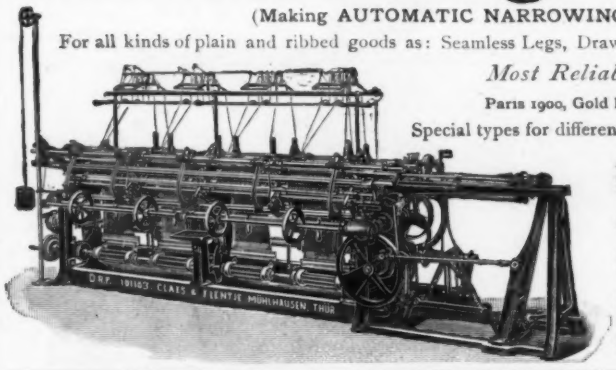

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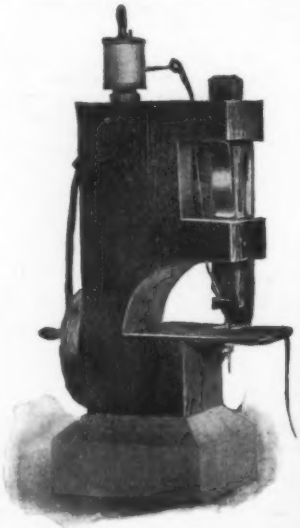

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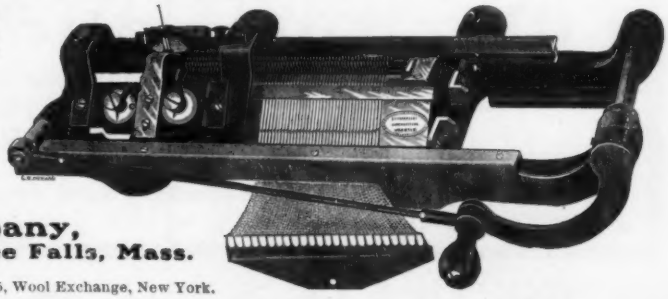

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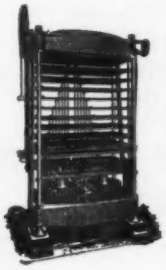

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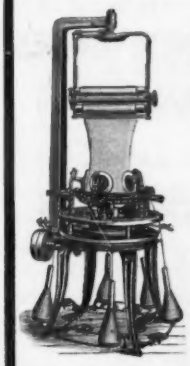

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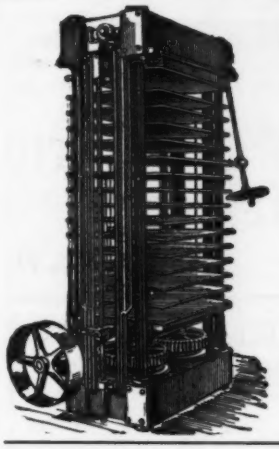

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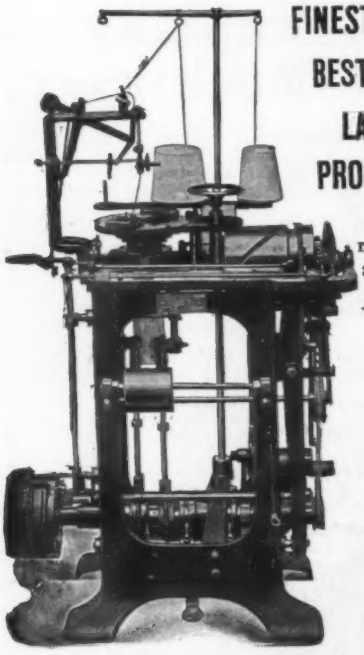

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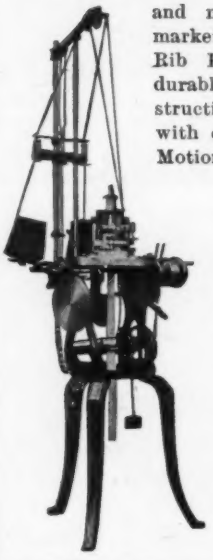

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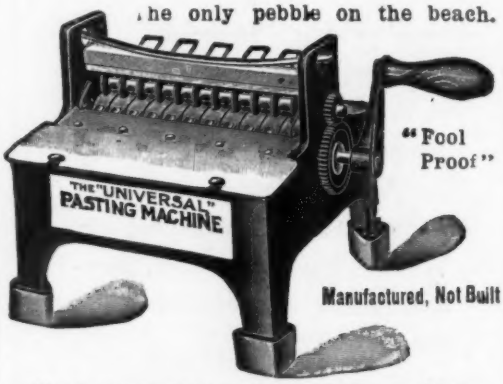

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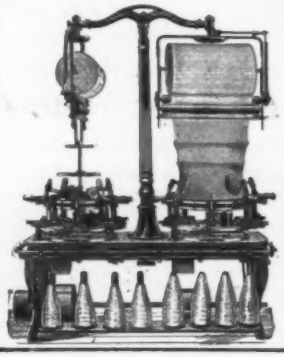

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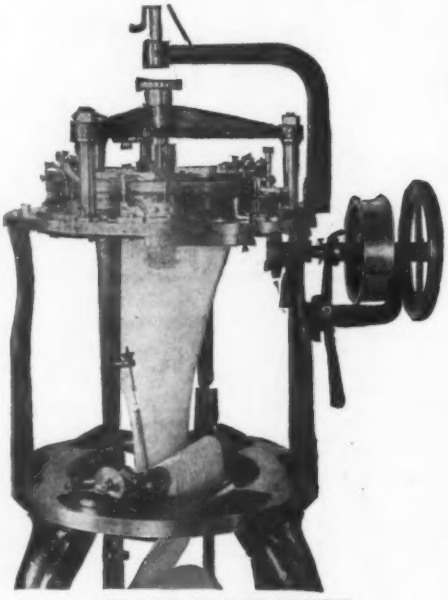

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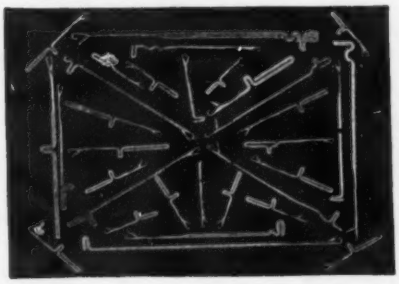

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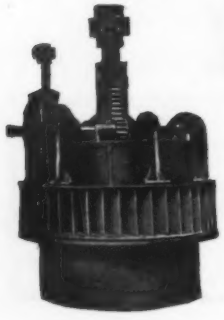

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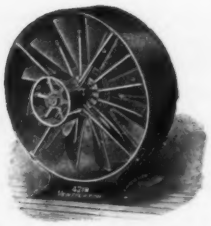

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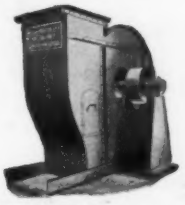

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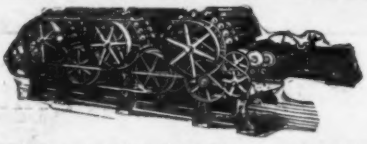
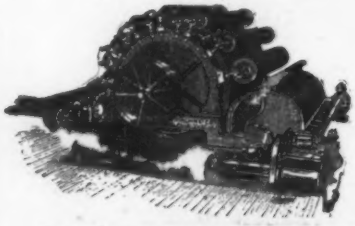
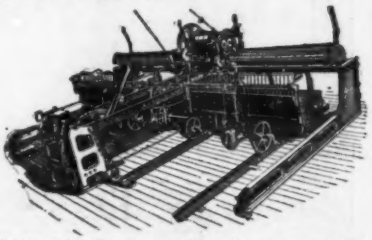


CARNETT MACHINES AND PICKERS

For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



WOOLEN MILL MACHINERY



Including Rag, Wool and Burr Pickers, Wool, Worsted and Shoddy Cards, Mules, Yarn Twisters, Warpers, Dressers, Spoolers, Etc.

Complete Equipment for Manufacturing Cotton Batting for All Purposes.

Special Carding and Spinning Machinery for manufacturing Yarn from such low grade stock as Mill Sweepings, Linters, Etc.

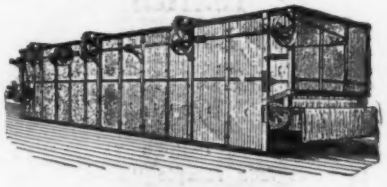
We reclothe or furnish new Metallic Toothed Cylinders and Rolls and relagg or furnish new Cylinders for any make of Rag Picker.

SMITH & FURBUSH MACHINE CO., Hancock and Somerset Streets, **PHILADELPHIA, PA., U. S. A.**

"CYCLONE" DRYERS

For Cotton Stock, Wool Stock, Rags, Yarn, Cloth Underwear, Stockings, etc.

Automatic Cotton or Wool Stock Dryer.



Automatic Yarn Dryer.

Steel Bladed Ventilating Fans.

Iron Bowl Yarn Scouring Machines.

Complete Carbonizing Outfits for Wool, Rags or Cloth.

THE PHILADELPHIA TEXTILE MACHINERY CO.,

Hancock and Somerset Streets, PHILADELPHIA, PA., U. S. A.

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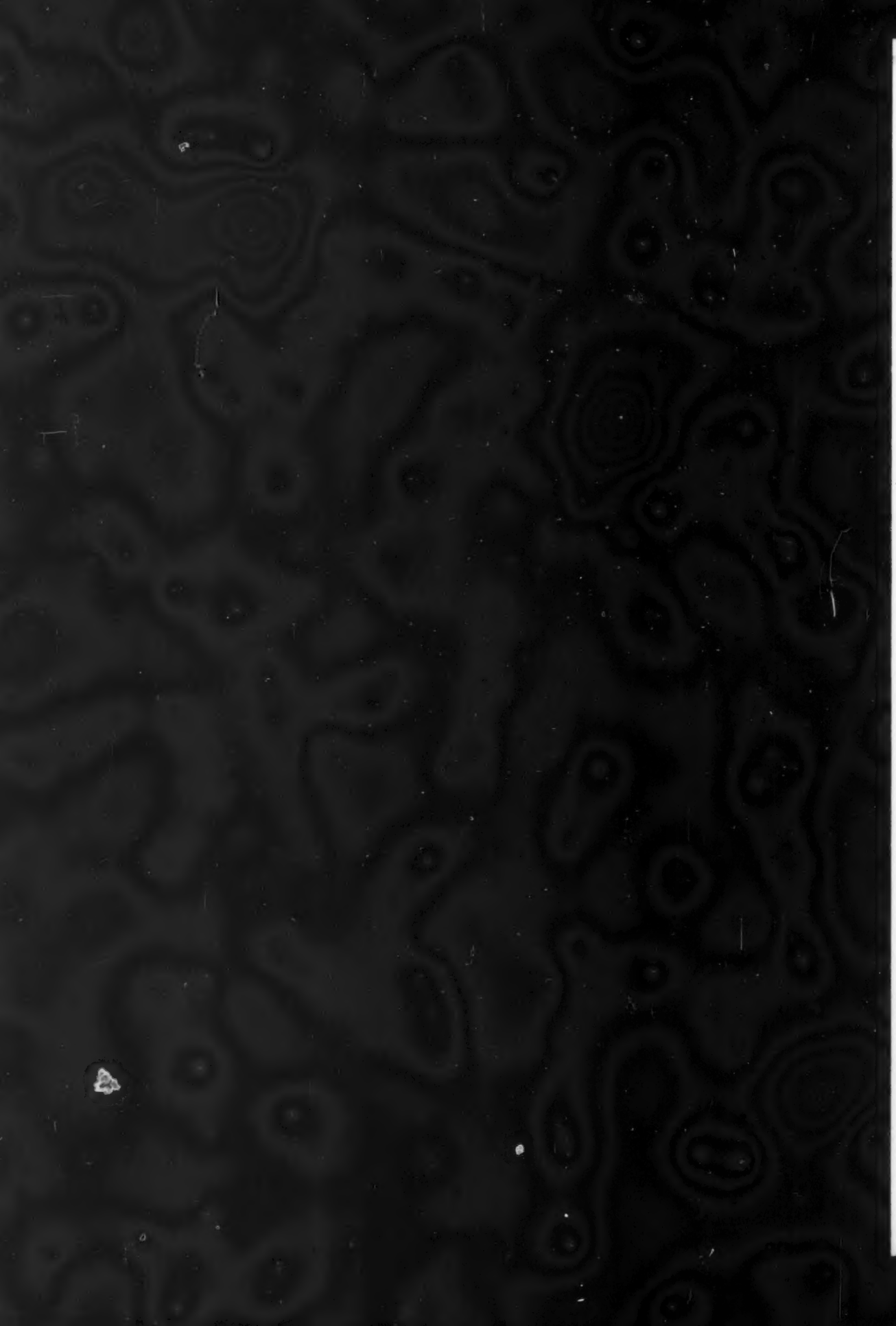
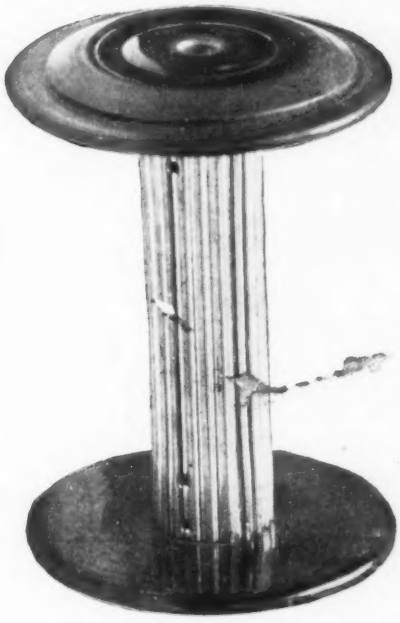
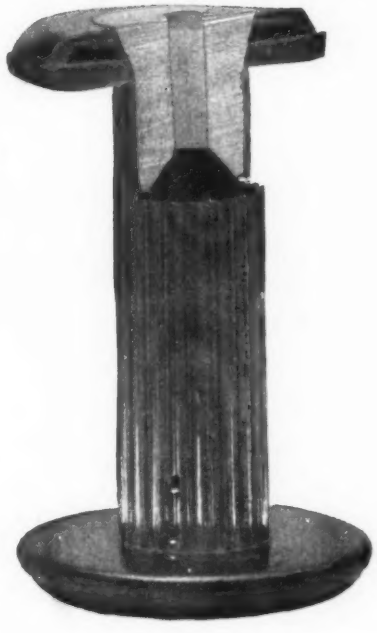


Rhode Island Fiber Spools



are so constructed that the many disadvantages of wooden spools are eliminated.

They are Practically Unbreakable



The barrel is made of corrugated tinned steel; the heads are of waterproofed fiber; the bushings are of birch which has been thoroughly shrunk and afterwards waterproofed; the barrel, heads and bushings are forced together by great pressure in such a way as to expand the dove-tailed ends of the barrel into the heads and bushings. This spool will stand up and will not break, splinter, warp, nor come apart. No glue is used in its construction.

Free samples will be supplied by the CELL DRIER MACHINE CO., Taunton, Mass. the Selling Agents, or Southern Mills by GREENSBORO SUPPLY CO.

Rhode Island Fibre Spool Co.

Providence, R. I.

Foster Machine Company

WESTFIELD, MASS.

BUILDERS OF

Cone and Tube Winders

For all branches of Textile Manufacturing. The standard knitting package "Foster Wind" is produced on the

Foster Cone Winder.

"Sirocco" Propeller Fans

At equal speeds have 50% greater volumetric capacity than other makes of Propeller Fans. For equal duties show 15% saving in power.

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IRON OR STEEL
for Fire Protection and Domestic Service.
Built in all sizes.
Write for catalogue.
Plans and prices cheerfully given.
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